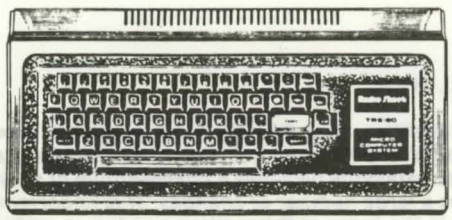
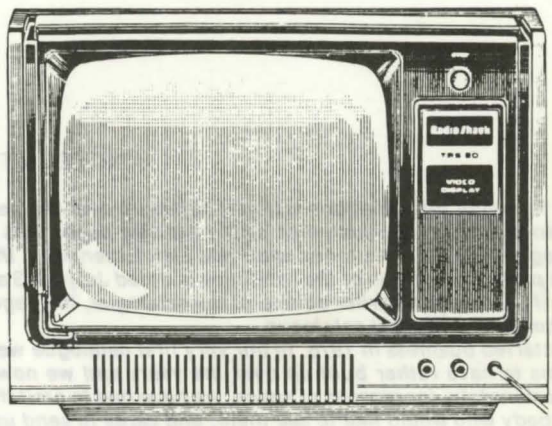
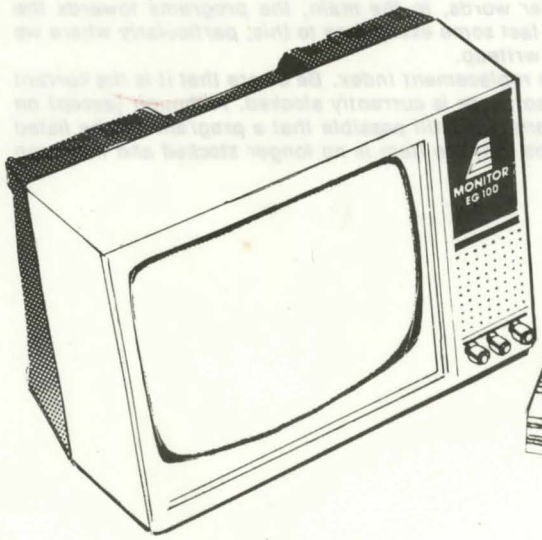
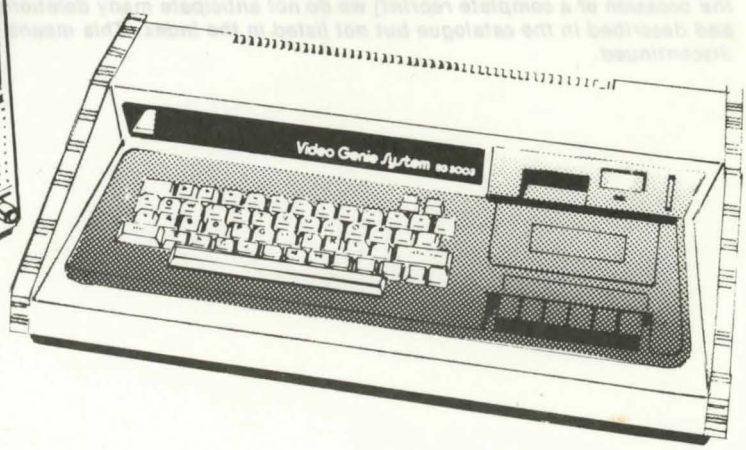
TRS-80 AND GENIE SOFTWARE

From HARDING'S - the TRS-80/Genie software people!









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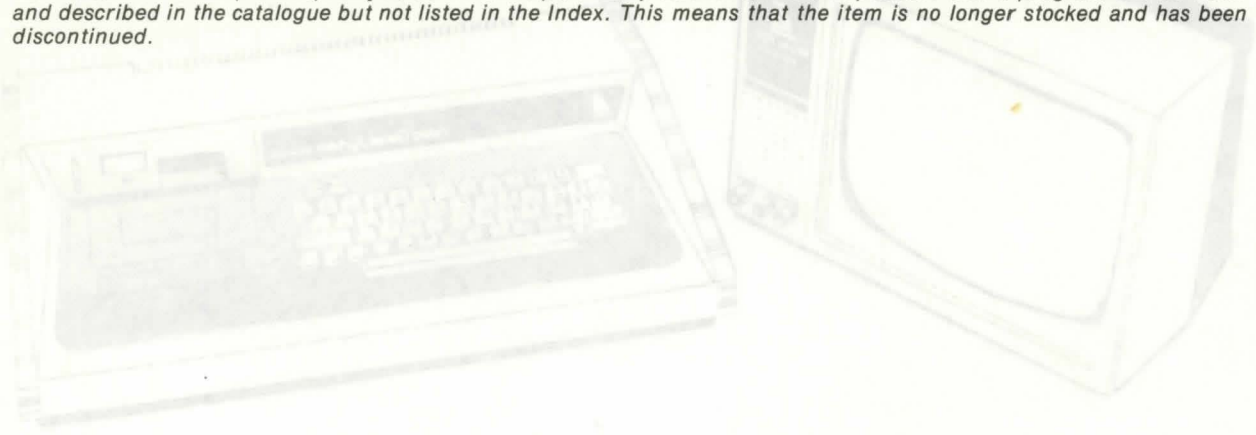
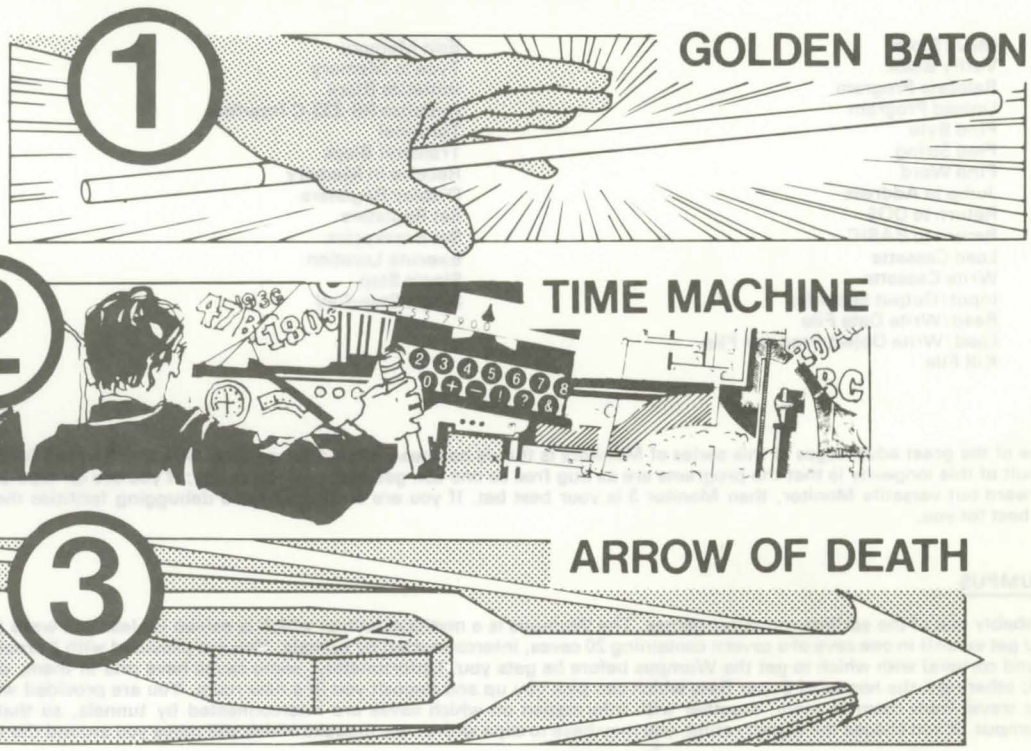
A NOTE ON THIS CATALOGUE

The format of this catalogue is that it builds up over the years by the addition, over 8 weeks or so, of several new pages. When this occurs the customer is sent the new pages plus the new Index and Price List. At the same time he is asked to disregard the previous Index and Price List. Essentially, therefore, the catalogue becomes a compendium of additions.
This particular edition of the catalogue is dated July 1983 and contains a large number of changes. It is important to note that if you have an earlier edition of the catalogue, the page numbers in the Index of this edition and future additions will not coincide with your catalogue.
We started business in 1978. In our very first catalogue we included what was intended to be a simple column of chat. It seems to have rather built up over the years and we now receive a great deal of correspondence and comments on it. Unfortunately, for reasons of space, we have had to omit the old Hints and Tips from this edition.
Anybody who would like to see them, and cares to send us an A4 size stamped addressed envelope for 17p. will be sent a copy of the 1978 to date column. Hints and Tips will of course be continued in the new additions to this catalogue.
To a large extent the makeup of the catalogue is historical. In other words, in the main, the programs towards the beginning will be older programs than towards the end. There are in fact some exceptions to this, particularly where we have gone back and added some details from an update to an original writeup.
Finally, when you receive a new addition, you will also receive a new replacement Index. Be aware that it is the current Index which is definitive as to whether or not a particular piece of software is currently stocked. Although [except on the occasion of a complete reprint] we do not anticipate many deletions, it is still possible that a program will be listed and described in the catalogue but not listed in the Index. This means that the item is no longer stocked and has been discontinued.



Mysterious Adventures



Mysterious Adventures is an Adventure series written by the English author, Brian Howarth. He has translated the series to a number of different machines but,in fact, it was originally written for the TRS-80/Genie. The quality of the Adventures is quite outstanding. As of July 1983 there are 10 in the series and more on their way. Undeniably Scott Adams started off the adventure interest so far as micro-computers are concerned but, just as undeniably, Brian Howarth has continued it. The Adventures available at the moment are:

The Golden Baton
The Time Machine
Arrow of Death Part I
Arrow of Death Part II
Escape from Pulsar 7
Circus
Feasibility Experiment
The Wizard of Akyrz
Perseus and Andromeda
Ten Little Indians

All the Mysterious Adventures are written in machine code and are therefore very fast. Lower case from the third Mysterious Adventure on is fully supported and the full 16K is used for Adventure itself. Instructions and synopsis sheets are supplied separately. We are proud to be able to introduce a truly English written Adventure series which is in all ways compatible, and in many ways superior to American products. Indeed it is indicative of this superiority that the Mysterious Adventure is now published in the United States, as are a number of our other programs. Although each Adventure differs, it may be useful to know that the ARROW OF Death (Part 1), for instance, contains 60 objects to manipulate and approximately 30 problems or puzzles to solve. Write ups on the new Mysterious Adventures as they become available will, of course, be mentioned from time to time in additions to this catalogue.

FILE AND DATA HANDLING FOR DISKS

A file and data handling programme unlimited in applications in that it incorporates a high degree of user architecture. It is similar in many ways to our Mailing List but the user decides what headings the date is to be filed under together with other programme parameters. File handling capabilities include adding or amending entries, display entries on the VDU or print to a line printer, searching for specific entries and displaying or printing all relevant data, searching the files when only partial information is available, print and display the entire file. Any number of entries may be filed with only one disk drive, although two drives add speed and ease of manipulation. Entry sorting is not supported at this time due to the slowness of Basic in handling large numbers of entries. A machine code sort is in hand at the moment, which will be compatible with this program and capable of being added to it. We will update the programs of present purchasers for the sort feature when it becomes available at a nominal handling and recording charge.

MONITORS 3 AND 5

Monitors 3 and 5 by Hubert S. Howe are probably the best available for the TRS-80 and Genie microcomputers. They are wide ranging in features and come with a well written manual of approximately 32 pages. Although the two Monitors are, to some extent, inter-changeable, the intent is that Monitor 3 should be primarily for tape users and Monitor 5 for disk users. It would be inadvisable for a tape user to purchase Monitor 5 because a number of the functions would not be usable. Tape users who have purchased Monitor 3 may upgrade to Monitor 5 for the difference in price only. Both Monitors are compatible with the Model III TRS-80. Monitor 3 is supplied on 500 baud tape regardless of the model upon which it is to be used. Although Monitors are intended primarily to assist machine language programming, they contain a number of commands which are of considerable help to all computer users. Generally speaking, a monitor interacts with the computer at memory address level. When a Basic program, or anything else for that matter, is loaded into the computer it is stored in different memory locations. With the exception of the Basic Peek and Poke commands, the Basic programmer

does not have access to the actual memory addresses. A monitor gives him this access, which frequently can be very advantageous. Furthermore the ability to actually look into memory and see what is going on, should be of interest to all serious computer users.
Some of the commands in Monitor 5 are given different names or omitted in Monitor 3. The most important omission is that Monitor 3 does not support the Breakpoints nor the Register display functions. In other words, Monitor 3 is pretty well a straight Monitor, whereas Monitor 5 is a Monitor/Debugger. The list of commands is as follows:

Move Block
Verify Block
Relocate Program
Unload Program
Find Byte
Find String
Find Word
Jump to Address
Return to DOS
Return to BASIC
Load Cassette
Write Cassette
Input/Output Sector(s)
Read/Write Data File
Load/Write Object Program File
Kill File
Edit Memory
Type to Memory
Initialize Block
Initialize RS-232-C Interface
Terminal
Transmit Block
Receive in Memory
Display Registers
Set Registers
Set Breakpoint
Execute Location
Single Step
Single Step-Call

One of the great advantages of this series of Monitors is that is has been around for so long. We first stocked Monitor 1 in 1978. The result of this longevity is that the programs are as bug free as one can get. As to which to buy; if you are on tape and want a straightforward but versatile Monitor, then Monitor 3 is your best bet. If you are on disk or need debugging facilities then Monitor 5 would be best for you.

WUMPUS

Probably one of the earliest computer games. The Wumpus is a mythical animal which is asleep (unless you wake it up, in which case you get eaten!) in one cave of a cavern containing 20 caves, interconnected by tunnels. You are provided with 5 crooked arrows (they go round corners) with which to get the Wumpus before he gets you. Unfortunately, some caves have pits in them, down which you can fall; others are the homes of Super Bats which can pick you up and deposit you in a new room. You are provided with various clues as you travel from room to room, together with information on which caves are interconnected by tunnels, so that you can hunt the Wumpus. If you choose the expert rating, you may have to cope with an earthquake which will move you around the cavern!

DRIVER

There are many versions of this game in which you are a racing driver trying to complete a course with the least number of faults. This UK written one is particularly good and features excellent graphics. Unlike others you only see the road ahead of you - not a plan of the whole course - so you are not able to prepare for corners ahead of time. The track is strewn with hazards and slicks of oil. The former cause a crash if you hit them and the oil may spin you towards the track edge, from which you may (with skill) recover. A running "Best score" is kept, so that more than one player can take part.

BINARY - HEX - OCTAL - DECIMAL CONVERSION

Sooner or later when using computers it becomes necessary to convert between these bases, and that is precisely what this program does for you. Simply enter the number you wish to convert and its base, plus the base to which you wish to convert and there is the answer!

USER PROGRAMMABLE FILE HANDLING

A nice program for home or business use. It permits the user to set up a 100 (maximum) record file, which may be stored on a cassette and repeatedly changed or consulted. Each record consists of 5 fields (categories) of information, each consisting of up to 80 characters. Options include: Input data; list the names (or anything else) on file; search and edit the file; record the file on cassette and, of course, exit from the program. As supplied, the fields are set up for a name and address file consisting (for each record) of: Name, Street Address, City, State, Zipcode, Telephone Number and Birthday. But these categories may be changed by simply changing the appropriate titles in the program. The best value for money that we have seen in file handling programs. This is a tape orientated program. A disk file handling program is shown elsewhere in this list.

AMAZIN

As the name implies, this is a maze game. The object is to travel from the top left hand corner of the VDU screen to the bottom right hand corner without hitting a block. As these blocks are placed on the screen randomly, and are continually changing, not only is each game different but you have to be fast to get through at all! Your travel is controlled by the four cursor arrows, which makes for an easily controllable progress.

LEVEL I IN LEVEL II RAM

It is often very useful to have both Level I and Level II especially when you have programs for both levels. This program will enable any Level II machine to be a Level I as well. It has a great advantage over the various hardware methods in that it is not necessary to do any conversion. Simply load the tape under SYSTEM and you are back in Level I exactly as if it were in fact a Level I machine. You have about 11K of memory available. All Level I commands are supported including abbreviations.

BIORHYTHM

Biorhythm is a theory which states that all of our lives are controlled by three life cycles known as Physical, Emotional and Intellectual. Each cycle is set at zero when we are born and transcribes regular cycles of 23, 28 and 33 days respectively throughout our lives, travelling from zero up to a most positive position then back down through zero to a most negative point and then up again to zero. As each cycle is of different timing they transcribe three separate sine curves and it is their position on any particular day of your life, which decides the type of day you will have. Whether you support this hypothesis or not it is undoubtedly fascinating to check back and forward in time to see how you were or are going to be!

DISASSEMBLER

A disassembler displays on the VDU or prints to a line printer a disassembly of the code contained in each individual address in memory. The display (or print) format with this disassembler consists of 5 columns: 1. The address in hexadecimal. 2. the contents of the address in hexadecimal. 3. The ASCII characters (if any) equivalent to the address contents. 4. The operation and operand(s) to be carried out in Z-80 mnemonics. All operands are in hexadecimal and the letter "H" is appended to them to show this. All Z-80 instructions are supported. All Monitor programs above have this function already.

OBJECT CODE RELOCATOR

This program is a TRS-80 Object Code Relocator designed to move programs written in machine code from one area in memory to another. All recognisable branch addresses within the program are also changed to fit the new location. It is extremely useful when a machine code program which you have bought or written, conflicts with another program which you frequently run or make reference to, as either may simply be relocated to a more convenient point in memory. This program is contained in the Monitor 3 program above. Programs cannot of course, be moved into ROM. It is probably possible to move some section of ROM (Level II) into RAM but it will probably usually result in a reboot. Obviously the address to which the move is made must lay outside the boundaries of the block to be moved. The program can relocate itself in a new position.

COPSYS

This is a machine code program for duplicating and manipulating machine language tapes compatible with the Radio Shack Editor/Assembler. It will duplicate as many SYSTEM tapes as required as well as load them for use. In addition it features facilities for comparing a tape with a tape which has been loaded, in other words verification. This is done in a "bit for bit" manner and is an extremely useful function. Finally, it will combine machine language tapes, one with the other, into a composite program. It will not however, merge tapes in the true sense as each incoming block is added on to the preceding one — it does not "interleave". As imported this tape is suitable for 16K machines without disks. It should not be loaded, as is, into a machine containing DOS or Disk Basic. However, customers that own either Mon 3 or the Object Code Relocater programs listed above, may relocate this program for either larger memory machines or to get it out of the way of Disk Basic. Alternatively, as a service to our customers we will relocate the program to suit your machine, for a charge of four pounds.

SHARE PORTFOLIO

This program is an analysis and maintenance system for private or company Share Portfolios. The data storage for the share holdings is contained on tape. It is a program which gives the user complete control of his holdings. A list of the most important items of information available to the user at all times, is given below. Facilities are, of course, available for updating throughout. In all cases automatic adjustment is made for Brokers Commission plus VAT, Transfer Stamp and the Contract Stamp. A specimen display of the summary of a holding is shown at right. A point to note is the use of the up and down arrows (they come out as a bracket and slash on the printer) to indicate "extraordinary" movements up or down. This is actually determined by testing for whether the smoothed average price exceeds the mean absolute deviation of the share price. The program is so complete that two Menus are used. The first, in addition to cassette input and output will access the full list of the Portfolio, details of one share holding, total value, a list of shares showing a profit, changes to holding details, changes to market prices only and the execution of a transaction. When the latter choice is made, the second Menu is called up which accesses the program sections governing: the buying or selling of a share holding, recording of a dividend, recording of bank interest, updating of the average price, updating of the mean absolute deviation, recording of expenses paid, adjustment of the Capital and Cash accounts, transfers at year end and settlement with your broker. The most important details which are available to the user at a glance are as follows:

PRICE TREND IS ? SINCE 1 APRIL 1979
SHARE VALUE IS - SINCE 1 APRIL 1979
[OR \ INDICATES PRICE NOW EXCEEDS NORMAL LIMITS

NO.	NAME	COST	PCH. PR.	MKT. PR.	PROFIT/LOSS
1 [	WIT. NIGEL	470.60	0.2353	0.55	610.12
2	LONRHO	390.10	0.84	0.80	-30.50
3	WESTERN SELEC'N	1,502.79	0.30	0.29	-78.10
4 [	MESSINA	803.86	0.8039	0.92	99.97
5	GOLD & BASE	286.50	0.0955	0.10	1.90
6	NIL	0.00	0.00	0.00	0.00
7 \	EX-LANDS	194.50	0.1945	0.16	-46.10
8	ZETTERS	698.71	0.5187	0.48	-63.95
9	J HALSTEAD	1,062.91	0.4252	0.4350	5.53
10	NIL	0.00	0.00	0.00	0.00

1. Cost of each holding.
2. Purchase price of each share.
3. Market price of each share.
4. Profit or Loss on each share, if sold at market value.
5. The number of shares in each holding.
6. Percentage of Profit or Loss on each holding.
7. List of details of profitable holdings.
8. Capital used to purchase the shares.
9. Total value of the portfolio at current market prices.
10. Total Profit or Loss on all shares held.
11. Total value, including cash balances, outstanding balance with your broker and total dividends received during the current year.
12. Percentage of gain on original capital.
13. Amount of capital set aside for shares.
14. Balance of cash available for future purchases.
15. Capital gains in the current year.
16. Balance outstanding with your broker.

NEWDOS +

The first disk operating system for Tandy Model I was TRSDOS 1.0. In fact that DOS was never used in the United Kingdom. By the time Tandy got here, we were up to TRSDOS 2.1. To say the least, TRSDOS 2.1 was a disaster although it probably reflected the state of the art at that time. Around the middle of 1978 nobody really knew much about microcomputers, including the manufacturers themselves. Hence when a machine using TRSDOS 2.1 used to throw up a lot of errors, everybody thought it was the hardware. In fact it was problems with TRSDOS 2.1. For when NEWDOS + came along the hardware suddenly started towork properly. It is not too much of an exaggeration to say that NEWDOS + saved a lot of people's sanity.
NEWDOS + therefore is the first of the DOS's which worked, and it is indicative of its quality that we are still supplying it. It is intended, nowadays, for users who have just purchased disk drives and do not intend to take any strong interest in the mechanics of the software or the hardware. In other words, for people who just wish to switch on their machines, sit back and use an applications program without bothering about anything else, then NEWDOS + is without a doubt the best answer. Parenthetically, for the user who intends to take an interest in the areas mentioned, he would be better advised to use smal-LDOS. Another big advantage of NEWDOS + is that it contains four free utilities. These were first included in NEWDOS + as a sales promotion, but as so often occurs in such circumstances, they have been retained ever since. The first is an Editor/Assembler which is self-explanatory. The second is a program called Superzap. Although this program has been improved very much by other Zap programs (notably Prozap), it is a fact that the word ''Zap'' started with Superzap. The program is, of course, a utility to enable the user to examine and modify the contents of a disk. The third utility is a Disassembler and the fourth is a program which will automatically check the validity of a disk directory.

RENUMBER BASIC

An extremely useful program by which all Basic programs may have their lines renumbered. Branches in the lines such as GOTO GOSUB etc. are automatically renumbered. There are two additional commands ''M'' and ''R''. The command ''M'' inserts a block at the end of the Basic in memory, so that further programs may be entered from the keyboard, tape or disk. When the user has completed this further program the ''R'' is then entered and the second program of Basic block is automatically appended to the first. This process may be continued as many times as required. The renumbering may start with any line number (within the machine's capabilities) and may increment by any value. This program is a machine language one and loads under SYSTEM. It may be put on disk with TAPEDISK and full instructions are included. There are three versions for 16K, 32K and 48K machines and orders must state which one is required. In default 16K is shipped.

''GSF'' GENERAL SUBROUTINE FACILITY

This is essentially a library of machine code language subroutines which may be either used on their own or incorporated into your own programs as subroutines. They may be nested into machine code programs or called from Level II Basic with the USR command. Some of them perform chores which could be programmed in Basic but, being in machine code, they perform the work many times faster than a Basic subroutine would. The program contains 18 subroutines as follows: 5 routines for display screen control scrolling up, down, left and right and for generating inverse graphic displays; 2 subroutines for drawing fast horizontal and vertical lines of any length or location on the screen; 2 subroutines for duplicating a byte in memory, particularly useful for the fast display of columns of figures; a subroutine for moving arrays in memory, for instance for rapidly setting one array equal to another; 2 routines for compressing and uncompressing data in memory; 2 subroutines for reading and writing arrays to tape, entire arrays can be read or written with one command; 2 routines for sorting arrays in memory, a 1000 element array can be sorted in 9 seconds! Frequently a Basic program is fast enough to perform 90% of the program but a dramatic increase in speed in one section can make all the difference! Please state your memory size.

REMODEL & PROLOAD

These are two Basic Program manipulation programs which now come on one tape. Remodel is a ''De-Luxe'' renumbering program, which enables the user to carry out the following functions on any Basic program:

1. Renumber any portion of, or all statements in, a Basic program. All references in the program lines such as GOTO, GOSUB, THEN etc. are automatically renumbered.
2. Move any portion of a Basic program from one location to another. Again all references are changed accordingly.
3. Delete any portion of a Basic program.

Proload carries out the following functions on a Basic program:

1. Load from tape all or any portion of, a Basic program formerly saved by the CSAVE command.
2. Extend resident Basic programs by adding portions or all, of Basic programs read in from tape.
3. Renumber separately the added program lines and change all references accordingly.
4. Restructure the total resulting program by moving the added program lines to any location desired.
5. Save all or any portion of a Basic program, so that it may be later loaded under CLOAD or by Proload.
6. Verify that programs written to tape are correct.

Remodel and Proload are machine code languages which are stored in high memory for execution at will. They may be stored on disk. Execution is by way of the USR command. They are, in essence, architectural tools by which Basic programs may be manipulated.

SARGON II

Sargon II, for some years, has been the leading contender for the title of best all round microcomputer chess game. It has been made available for pretty well all microcomputers. It has two big features, the graphics representing the playing board are excellent and the quality of play is superb. Unfortunately the better the chess program gets at playing chess the slower it becomes. Sargon II is, in the higher levels, slow in its responses. Sargon II contains all of the normal functions of a chess game including En passant pawns, queening and castling. It has 7 levels of play. Levels 0-3 play in tournament time. A particularly nice feature is that it has a randomised opening book for all 7 levels of play for 3 moves. The board may be set up for solving puzzles, the board may be changed and, of course, the player may choose whether to play black or white. A hint to the player giving what the computer thinks is his best move is available for most non book moves. The player may resign at any time of course.

SPACE FIGHTER

You are in the cockpit of a space fighter out in space under the constellation of the Plough with 5 enemy fighters to shoot down. Get one in your sights just right, fire your missiles and he explodes in front of your eyes! User programmable functions include the number of missiles you have on board and a skill setting which sets the speed of the enemy. The number of enemy fighters may be changed by program alteration.

HAMURABI

For those who prefer a thought provoking game to an action one. You are appointed the Govenor of Sumeria for 10 years and your success or otherwise depends upon your handling of the country's land and resources. In particular, you are concerned with making such decisions as the harvesting of crops, the buying of land and the planting of how many acres to seed. Get it right and your people do not starve – get it wrong and we take no responsibility for what you are called!

SUBMARINE CHASE

Another action game, this time as Captain of a destroyer hunting a submarine in enemy waters. If your depth charges make a close enough drop, you will disable the submarine and you can close in for the kill. After each drop, the submarine's position in distance and compass bearing is given to help you find him. This Asdic information must have been delayed on its way to the bridge however, because it is relevant to his position when you dropped the depth charge – he will have moved a little since then! User choice of skill level. After the game you can display the submarine's course.

DOMINOES – FULL GRAPHICS AND REALISM

Long a popular English game, Dominoes has been rather ignored by microcomputer programmers. This version, however, by Barry Dunn is highly recommended. The graphics are excellent and show the bricks exactly as they appear in a normal game. The usual Dominoes rules apply. Start it with a double 6 or a double 5 and then on down to the point at which either the player or the computer has a double to start. The game is normally played against the computer, but a feature is included whereby the computer can play itself. The computer and the player each have 7 bricks. The player, of course, cannot see those owned by the computer, although there is provision for peeking. The computer cannot see the player's, and is not permitted to cheat. As play progresses, the bricks are laid end to end, automatically turning corners as the end of screen is met. If you cannot lay a brick you pass (called ''knocking'') and the winner is the one who plays all of his bricks first. The computer play has quite a bit of built-in skill but it is quite possible to beat it if you play a good game. We have found it quite addictive, probably because the games do not take too long to play so the fun is fast and furious – we highly recommend it!

AUGUST NEW LISTINGS

LINEAR REGRESSION – FOR MATHEMATICIANS AND STATISTICIANS

This is a straightforward Linear Regression program. Inputs required from the user are: whether a best line through the origin is required; whether the data to be entered is of equal weight; the number of points in X, Y configuration and after the analysis has been carried out by the computer, whether interpolation is required. Data provided by the machine is: best slope; standard error on the slope; degrees of freedom and if requested the interpolation of Y for X. Linear Regression is often included in higher costing statistics packages but often it is needed on its own. This program from an English author is reasonably priced to fill this need.

INFINITE BASIC – LEVEL I, LEVEL II, LEVEL III AND NOW INFINITE!

Infinite Basic is a modularised machine code Basic Interpreter which adds over 70 new Commands to regular Basic. An important advantage of it is that the modularised structure means that if space is tight, only required sections need be loaded into the machine. At this time we are not sure whether or not it is compatible with Level III and it is suggested that customers wishing to run them both together should check with us before ordering. The functions of Infinite Basic (so named because an infinite number of commands can be added in the future) are divided into two broad categories. Firstly, **complete** string functions are added including: left and right justify, truncate, rotate, text justification, string centering, deletions or insertion of substrings, pack strings, conversion to upper or lower case, translate characters, reverse strings, verify, test number of occurrences, masked string searches for simple or array variables, encrypt and decrypt strings, compress and uncompress character string arrays to six bits or less per character and very fast multivariable and string sorts. Secondly, complete Matrix functions are added including: matrix read, inverse, transpose, identity and simultaneous equations, add subtract or multiply scalars, vectors or multidimensional arrays, dynamically reshape expand and delete arrays, change arrays in mid-program, copy array elements, set arrays to scalar, zero arrays, move arrays, tape array read and write including string arrays. This program will be available as from September 14th 1979, orders received before that date will be shipped strictly in rotation.

AND – INFINITE BUSINESS

This is an add-on package to the above. It includes multiple precision packed decimal arithmetic which will eliminate round-off error with extreme accuracy. Also included is binary search of sorted arrays, insertion of new elements in sorted arrays, automatic page headings, footings and pagination including forced end of page and automatic hash for record retrieval. Same delivery as above.

C12 – TWELVE MINUTE BLANK CASSETTE TAPES

These are blank versions of the tape that we actually use in production. They are specially produced to our specifications and are highly suitable for all program and data storage. They are supplied complete in library cases and with un-affixed labels.

BLANK CASSETTE LABELS

Customers always seem to need blank labels so we stock these. They are die cut white self-adhesive. Note that the above blank tapes are supplied with labels and thus these blank labels should only be ordered if extra labels are required.

BLANK DISKETTES

Molimerx stock four different types as follows:

5" Standard 40 track single density
5" 40 track double density
5" 80 track double density
8" 80 track double density

Although the manufacturers describe these disks as we have described them, in fact all disks are made in one manufacturing run and then tested to various qualities. Thus, the first of the above is the lowest quality and, as far as the 5" disks are concerned, the 80 track double density is the highest. There is a great deal of overlapping in disk qualities. Standard 40 track single density may frequently be used in double density, and either a 40 or 80 track double density may often be used for double sided work. However you use your disk is a matter for you. We must make it clear, however, that it is to the above specifications that we guarantee.

Customers may wish to know that a staff member conversant with the technical aspects of both the TRS-80, the Genie and our programs is always available at Molimerx during normal office hours. Outside of office hours an answering machine is provided to take such queries or orders on telephone line Bexhill 220391. Other telephone numbers supported by Molimerx will not have an answering service attached.

MATRIX MANIPULATOR – COMPLETE NUMERIC ARRAY MANIPULATION

This program enables the user to set up a two dimensional array (rows and columns) of numeric data and thereafter manipulate it in accordance with some 33 commands. The array may be stored for later display with the Graph program following or by user written regression analysis or other linear programs. Some four or five additional programs are in the course of being written which will be compatible and will form a complete suite. The Commands available in this program are as follows:

```
IR: INPUT BY ROWS      IC: INPUT BY COLS      IX: LIST INPUT CMNDS
LR: LIST ONE ROW       LC: LIST ONE COLUMN    LM: LIST WHOLE MATRIX
LE: LIST LAST ENTRY    LL: LIST LAST LINE     BS: BACKSPACE POINTER
LO: LOCATE POINTER     PS: SET POINTER        HO: HOME POINTER
DI: DIMENSIONS         MO: CHANGE MODE        CM: LIST COMMANDS
XR: EXCHANGE 2 ROWS    XC: EXCHANGE 2 COLS    IN: INVERT ROW OR COL
SR: SERIALISE ROW      SC: SERIALISE COL      SO: SORT IN ↑ ORDER
ZR: ZERO ONE ROW       ZC: ZERO ONE COLUMN    ZM: ZERO MATRIX
NR: NAME ONE ROW       NC: NAME ONE COLUMN    RN: NAME ALL ROW
CN: NAME ALL COLS      SA: SUM/MEAN/SDEVN     TR: TRANSFORM
BC: BLOCK COPY         SV: SAVE TO TAPE       QU: QUIT RUN
```

Maximum dimensions of the array are restricted only by the amount of memory available, although only 40 × 40 row or column names may be used. When saved to tape the array can be given a file name. This is a Basic program incorporating an automatically loaded machine code subroutine for high speed. Two versions of this program (and Graph below) are available – apart from 3 memory versions – one for Level II and one for Level III. Level II performs calculations in Single Precision whereas the Level III version has the option of Integer, Single or Double precision. Furthermore the Level III version has 3 additional Commands, 2 to set the real time clock and display time – for which an Interface is required and the third to enable and disable the automatic command listing. Very full documentation is supplied. This program is also available in a disk version where, of course, the storage is on disk. Its title is Prodata.

GRAPH PLOTTER – A SISTER PROGRAM TO THE ABOVE

This program may be used in conjunction with the Matrix Manipulator, and with storage media produced by that program, or on its own. Like the Manipulator, it will accept data from the keyboard or from store. Data may be displayed either in the form of histograms (bar charts) or as a line plot. Additionally the program analyses the data to display mean, standard deviation and where relevant median and mode. A large number of options are given to the user in both the display and type of analysis. Either rows or columns may be analysed for group frequency or single points. The display of the histogram or curve is exceptionally good giving options of block width, block height increment and the standard deviation range required. The number of undisplayed points, above or below the scale are shown. Bearing in mind the problems of displaying graphs on a computer screen, a particularly important feature is the ability to turn on the cursor when a graph is displayed and then move it so that it coincides with a graph point, whereupon the exact value of that point is displayed. A scale multiplier is always displayed. As with the Manipulator, extensive documentation is supplied.

MAILING LIST

This mailing list is an elementary but full feature dedicated database handler. It was written some time ago and does not pretend to be to the sophistication of newer programs like PowerMail. It does, however, fulfil the functions described below and has a slot in the marketplace in that it is of low cost.

Initial	Town
Name	County
Street Address	Postal Code
Suburb or Village	General

The General title as supplied has an unused status. The user may insert any field title that he requires. Search through the list with this entry as a key is supported. The following operations may be carried out on the list:–

1) Search for whether or not a name is on file and if it is display or print to a line printer or relevant data.
2) Search for a name when only part of the name is known or when the spelling is in doubt.
3) Delete or change any entry.
4) Add entries.
5) List the entire list either to a line printer or the display.
6) List either to a line printer or the display names and addresses only in label form.
7) List to the display or to the line printer entries in the ''unused'' field.
8) Make individual labels of any single name.
9) Access for search, deletion or change by record number. The record number of each record is displayed when the data for a particular name is shown.
10) Provision is made for a fast search. This has some restrictions however. The way that it is carried out is that the entire file is loaded into the computer when the fast search function is called. Thereafter the array which has been set up in the machine to hold the data is searched which means that a name may be selected within 10 or 15 seconds. The feature is of major importance when a number of names are going to be called from within the same file. Other searches in the program bring in each name from disk and search it until the correct one is found. Obviously having the names already resident in memory is far faster.
11) The user has the option of automatically listing all blank record spaces so that they may be filed under the Change command.

The program is friendly and mostly forgiving of errors. Graphic blocks are used to display the number of characters available on each entry line. The program is written as a low cost general purpose mailing list, suitable for a large number of applications.

RACE – A HORSE RACING GAME

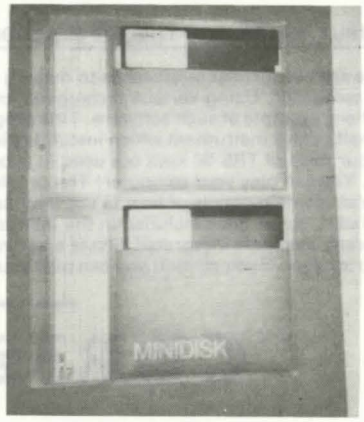
This is a fascinating horse racing game featuring extremely good graphics. The horses racing up and down your screen have to be seen to be believed. The player is given the choice of racing over fences or on the flat. Any number of players to six may take part and the players have the option of having up to four laps run in a race. Each player is allocated 100 pounds with which to bet. The horses in any particular race are chosen from a pool of 50 and the odds are posted relative to their speed and past performance. In the cassette version this performance is restricted to the game session being played. With the disk version performance is saved to disk and the odds are therefore based upon a longer period. After each player has placed his bet the race is run. After the finish, each player has his betting money adjusted, according to the odds. Providing at least one player has some money left – no credit is allowed! – another race is formed. If hurdles are chosen a horse may fall at a fence and this fact is indicated on the screen.

STOCK MARKET – GAMBLE IN SHARES WITHOUT RISK!

If you have always wanted a go at the Stock Market, here is your chance – without risking your own cash! The idea of the game is that you are given ten thousand pounds and two years within which to make a fortune – or go bust. The two years is divided into 24 periods of a month each. Each month you may buy or sell shares (in the latter case you must of course own them, and in the former you must have enough cash left) and at the end of the month all prices are affected by what has happened during the month. During the month

you are given various tips from well meaning friends — which may or may not be correct — and items of general news which might affect the value of shares which you own. Market news may be that companies are on strike, still on strike, the announcement of new products, new developments, more investment into a company and so on. The bad news depresses prices and the good improves them. Sometimes annual profit and loss news is given for a particular company which seriously affect prices. There are 10 share categories stretching from Banking to Industrials and each category contains five shares. You may either buy or sell in each category in order. At any time during the game you may call up a list of the shares which you own which gives details of their cost, any change, the number owned, average cost and profit or loss on the holding. Similar details are also given under each category of shares. If you have ever had an inkling that you might do well on the market (and incidentally its the English one not the American!) have a go and find out!

ACCESSORIES



These sleeves constitute a low cost approach to diskette storage and filing. They are plastic sleeves, punched for regular 8cm English two ring binder and the standard American three ring. They are simply filed in the binder and the diskettes are put in the pockets. Two removable index cards are inserted in their own pockets which have ample space on which to write disk contents information. The sleeves are made of stout vinyl and measure 8¾" × 11½" overall. Our binder may be purchased at its nominal price or you may use your own.

NEW!! An improved version contains slightly wider pockets so that the cardboard sleeve which accompanies diskettes may be housed — as illustrated. Not shown in photograph is a new universal punching so that the sleeve will fit any type of binder.

IMPORTANT

1. It is essential that customers state their TRS-80 configuration when placing an order, particularly the memory capacity. A large percentage of our programs now have different versions for different memories and shipping the wrong one only causes delays. Where a memory size is not stipulated we normally ship 16K or the lowest, if it is greater than 16K.
2. We support our software completely. If for any reason, including operator error, a program becomes corrupted we will repair it free of charge. If a customer has any problem in running a program we will do everything within our power to help. We want you as a regular customer and we will stand behind you at all times — you are never "out in the cold" if you have bought the program from us. The only thing that we cannot guarantee is that a program is bug free — no one can do that (see the terms of sale in the price list) but even if a bug does appear we will do the best we can to find a cure and, if it is important enough, print it in a future list.

BAR CHASE — A GAME OF SKILL

Although this is one program it really consists of two separate games. In the first, you can elect to play one player against another, the player against the computer or the player against time. The game is played on the screen and — taking the player versus computer example — immediately the game starts, the computer will commence to move its dot around the screen, leaving a bar trace behind it. The player moves his dot and bar with the cursor keys (a Genie version will be available soon) and the object of the game is to contain and surround the computer's bar. When two players take part in the game, different keys are used. From the very commencement of the game, random obstacles are thrown up on the screen and, not only do you have to contain the computer's trace, but you have to avoid hitting any of the obstacles. Sound effects are provided. We feel that the second part of the game is the one with the most appeal. Unlike the first game, the object is not to contain a trace bar, but is to sail around the world by a practical route without getting sunk. The game was written by Mr. M. Norris, who also wrote Cube Hunt, which is mentioned elsewhere in this list, and he uses the same excellent graphic simulation of the world map in this game as he did in Cube Hunt. Again the map is divided into two as previously described and automatic wraparound of the map is provided. You have to return to your home port at Plymouth and during the journey you must not hit any land and you will have to avoid a number of hazards as you go. If you do not avoid them or if you hit land, then you will sink. There is more than one way of completing the trip successfully and there are lots more ways of not completing it!

SUPA-TREK — REAL TIME STAR TREK

This brand new (and English written) version of Star Trek features excellent graphics plus a new dimension — time. Each game lasts 15 minutes and you have to get all the Klingons in that time. It also combines some of the features of "Space Fighter" and similar games in that you have to aim your weapons on the Klingon and hit him — after you have found him. Furthermore docking is not accomplished by merely impulsing or warping to the sector in which the Star Base is situated. Once you get to the quadrant you have to steer the Enterprise so that it actually docks — and it is not as easy as it sounds! As you are also fighting the clock (time is counted down and displayed continuously) things can get a bit tight! Apart from watching the clock you must keep an eye on the fuel remaining and how many crew members you have lost. The universe is made up of 27 quadrants or solar systems arranged in a cube (imagine 27 building blocks in a cube). The graphics are not the usual display of quadrants. You (as you would in real life) are continuously on the bridge of the Enterprise with the control panel in front of you. Through this you look out into space when you are actually in battle — so that you can aim your weapons — and at other times this area is used to display information. Star Trek has always been popular but has hitherto been more of an intellectual computer game. The accent with this version is on action! Requires 32K either Level II or Disk.

INVADERS — STOP THE INVADERS FROM LANDING

The Invaders program, both in computer games and dedicated television games, is such a well known activity that it hardly needs description. Essentially the player is presented with a large number of slowly descending Invaders represented by graphic drawings. To combat these he has a moveable laser base, this moves along the bottom of the screen behind a number of laser blocks. These blocks provide some defence for the laser base, but when hit by a bomb from the Invaders, a hole in the block is made through which a subsequent bomb can pass. In other words, the blocks are gradually eaten away. Unfortunately, if the laser base itself fires a laser bomb through the block the same effect is brought about. The program is written in machine language and is therefore very fast. It also supports sound. The big advantage of this particular version of the game is that almost all of the game parameters can be chosen at the start of the game by the user. In other words, the player has complete control over how fast the game runs, how many bases he has, how many shots may be in the air at one time and so on and so forth. So far as is known, this is the only version which does allow a player essentially to sculpt the game that he wishes to play.

VAT REGISTER – NORMAL AND VAT 'D' IN THE SAME PROGRAM

The intent of this program is to cut down the time taken in entering and calculating VAT returns so that in some respects the dreaded "VAT Day" is made at least partly pleasurable. Using this program, the only manual task of the user is to keep his Input and Output invoices – preferably in order and separately – and type the relevant information into the computer. A printed Register and Summary of Input and Output Tax is supplied by the program and it is from this that the VAT return can be easily completed. The program has been nicely written and is particularly aimed at those computer users with little or no experience. It should certainly be possible for an ordinary typist to enter the necessary information. Error trapping is included and indeed a complete VAT entry cannot be accepted unless it makes sense. All provisions are allowed for including zero and standard rate transactions. The VAT rate is changeable by the user and at the present time comes set at 15%.

COMPUT-A-ORGAN – THE TRS-80 BECOMES AN ORGAN

There are two distinct approaches to making your computer perform music. The first is to write software which enables the machine to be a composer. Using various techniques, compositions are fabricated, stored and then played back. The Tandy Micro Music is an excellent example of such software. This program uses the other approach which is to literally turn the TRS-80 keyboard into a two and one half octave instrument which instantly plays back the notes which are struck. In other words in the same way as an organ or piano. All four rows of TRS-80 keys are used in a logical way and they are made identical to the keys of the instrument, with black and white keys. You can play your computer! The problem is how do you hear it. If you do not want to make a sound box, the instructions for this program contain details of how to use your cassette recorder to play back through an earpiece connected to it. This is, of course a little restricted, so we have included in the instructions a free circuit diagram of how to build your own sound box. This only consists of one generally available integrated circuit and two capacitors, plus of course a miniature speaker and battery. Either way, if you can play a piano (or even if you cannot) you can play your TRS-80!

CHRISTMAS LISTING

SOME FANTASTIC NEW GAMES FOR THE HOLIDAY!

BATTLE OF BRITAIN – BY A SERVING RAF OFFICER!

Terrific fun – and completely authentic. The graphics of the SE England and NW France map is particularly good. Each time you play it is a different day in August 1940 and you have to not only survive but shoot down the invading planes as well. The game is cleverly constructed to make it a mixture of action and strategic skill. You are, in effect, not only an individual pilot but also the Air Marshall commanding the fighter forces. You have 13 Squadrons at your disposal, all at authentic airfields. It is up to you when to alert them and then when to scramble them into the air. Although you will destroy more enemy planes if you have more fighters up, don't forget that petrol and ammunition were short in those days! As the fighters go out on sorties, so you are given radar information on the approaching German bombers. The graphics of the actual combat have been very carefully prepared so that they give a close simulation of actual air battles. If you do not destroy enough enemy planes in the air, they will get through and bomb your airfields which further depletes your resources. During the air battles talking between the fighter pilots is flashed on the screen, to warn you of enemy planes on your tail or to tell you of other fighters which have gone down. Disposition of both the English and German Squadrons are shown on a map at the beginning of the game and every time you are compelled to return to base to refuel and get more ammunition. You can control the speed of the game for the action sections and you also have an overall variable skill level depending on how many hours flying experience you enter. If you like both strategy and action games this one is for you!

MINEFIELD – A NEW VERSION OF AN OLD FAVOURITE!

Minefield games for micro-computers are quite common but this is one of the best we have seen. The idea of the game is to successfully cross a minefield in which a number of hidden mines have been laid. If you step on one you will be blown up. In order to help you across, you are equipped with a mine detector. Unfortunately this can only tell you that mines are in your vicinity, not their exact location and also it has limited battery life. You will probably have to go about a quarter of the way on your own. The field in which the minefield is situated, which you have to cross, is also strewn with rocks. These are a mixed blessing, for although there will not be a mine under them, they are too big for you to climb over! You may get yourself into the position where you are surrounded by rocks and mines! The rocks of course are visible. Your path through the minefield is traced as you go, so that you can always turn back and know that the path is safe – doesn't get you too far however, as you are supposed to be going forward! After the game is over you may view the placement of the mines – even if you have been blown up! Movement is effected with the four cursor arrow controls and automatically repeat if you hold them down, which lends itself to an easily played, and therefore enjoyable, game. The total number of steps in the field are 180 and as there are 20 mines and 20 rocks, the odds are set rather nicely! If you step on a mine and then choose to display them all, the one upon which you trod flashes on and off to separate it from the others. A nice touch which is the hallmark of a good program.

ASTROLOG – FOR ASTRONOMERS AND ASTROLOGERS

This is a very full program for anybody who studies the heavens and is intended as an aid, in that it carries out the rather complex and mundane calculations necessary to calculate positional data for the Sun, Moon, 59 navigational stars, Inner Planets, Jupiter and Aries. The program starts by asking the user to input the latitude and longitude of the observation point. He must also input the height above sea level. The time zone correction will accept decimal hours as there are one or two places with hour fragment differences. Provision is made for readouts to be made automatically in GMT. The program is an interactive one and it has been made very simple to use, for instance, times are entered in hours, minutes and seconds, rather than as decimals. After an initiation date (the program is valid for the period from January 1st 1900 to December 31st 1999 for any place on Earth) has been entered into the computer and the celestial body chosen, two options are given. The first is to obtain data at a specified moment in time. This includes GHA, LHA, SHA, RA, declination, altitude, the azimuth and where appropriate, semi-diameter parallax and distances, together, in the case of the Moon, with its age. The second option provides rise and set for the day in question, time of upper and lower meridianal passage and altitude at upper meridianal passage. The plus or minus accuracy as minutes of arc are as follows: Sun 1, Moon 5, Stars and Aries ½, planets 10. Distance accuracy is to two decimal places, the Moon age to three hours. Parallax is within two minutes in most cases. The accuracy stated is the worst case, usually it will be better. This is a full and serious program written by an experienced observer. It may well be that these notes have not done it full justice due to our lack of knowledge of the subject, for which we apologise. It is written in Basic and supplied on cassette, but can, of course, be put on disk.

DATABASE MANAGEMENT SYSTEM — AN INCREDIBLY VERSATILE DATABASE FOR TAPE OR DISK!

A Database program is a general purpose filing system which enables you to build files containing large quantities of information regarding a particular application and to manipulate the file in a number of different ways. A Mailing List program for instance is a dedicated Database, although you can manipulate the contents of the list you are restricted to the manner in which it is set up. If it is arranged with a certain number of lines for the name and address, then you are restricted to them. This program allows the user to decide how the file will be structured, what its subject will be and how it is to be manipulated. It may be used time and again to build different types of files; it is in effect a mother program which you may use to spawn any number of data handling programs, each dedicated to a particular application or use. So that we may be more easily understood, let us define a few words. A file is a collection of data arranged in records; each record contains a number of fields; a field contains either a string or a number. Taking our previous example of a mailing list — the complete list is a file; each person's data is a record and each line of the record (name, address etc.) is a field. If a field contains only digits it is a number, if it contains only letters or a mixture it is a string. Having got that sorted out we can more easily describe the versatility of this Database. First of all, it can use either tape or disk for storage and is compatible with Disk Basic or Level II. Consequently, so long as you have a minimum of 16K memory you can use this program! You have complete freedom when making the file — you define the number of fields and you define their contents. You can have as many or as few fields as you want, the only restriction is the amount of memory in your machine. Once you have created your file you can manipulate it by adding records, deleting them or changing them. They can be searched for a specific value or item in a field. They may be sorted either numerically or alphabetically. All of the data in a particular file can be totalled. The file can be printed on a line printer or displayed on the VDU. The manner in which the file is printed can be formatted in an incredibly diverse manner. To summarise these manipulations, the following is a list of the commands available to you:

A	Add records to a file
C	Change records in the file
D	Delete records — with automatic "close up"
E	Exit program
F	Find any item
J	Justify the printing or display format
L	List the file on the VDU
N	New file creation
P	Print the file on a line printer
S	Sort the file
T	Total the items in a field
W	Write the file to cassette or to disk

To clarify the "T" command. It may be used in either one of two ways. Firstly you can total the numeric contents of the same field in all of the records. An obvious use is a file containing payments from individuals; one field would be set up for their name and a second for the amount paid. After the file is created, the program will, under this command, total all of the amounts paid. The second way is to total selectively. With our previous example, assume that men have to pay more than women. Create a file with three fields; name, amount and sex. This command will now total the second field in all the records, using the third as a key. That is it would total all of the amounts paid by just men — or just the ladies for that matter. Furthermore don't forget that this is a manipulation, the program is not committed, after adding all payments by men you could then total the ones paid by women!
As mentioned in the list above, when the "D" command is used to delete a record, all of the others close up so that there are no blank records.
When you choose either the "L" or "P" commands, you have the following choices as to format:

1. Print the entire file or a part thereof. If you choose the latter you will be asked for the starting and ending record number for the display.
2. Print or omit the field specifiers (name, address or whatever).
3. Print or omit the record numbers of each record. This incidentally is how you ascertain the record number, if you do not already know it.
4. List in numerical record order or sorted.
5. Whether or not you wish the print to be justified.
6. Whether or not you require the numeric fields to be formatted. If the reply is affirmative the format will be as for money, that is to say with 2 decimal places, leading zeroes suppressed and with all of the full stops between the pounds and pence in line under each other. If the reply is negative, the numerals are displayed as entered. In format mode a $ is automatically displayed to indicate the non-existant pound sign on the Tandy. This can be eliminated if required.
7. How many blank lines are required between each record.

As can be seen this is an extremely versatile and complete program for the sophisticated filing and manipulation of all types of file data. It is however, obviously, restricted by the amount of memory available and how that free space is allocated by the user. A program which uses a large amount of string space will have to contain less records than one which only uses numerals, as string space is reserved and inevitably there is some overhead. It is therefore impossible to give exact figures as to the number of records per file. However, as a general rule the following statistics may be of use:

No. Fields	TRS-80 48K Disk	TRS-80 32K Disk	TRS-80 16K Cassette
2	822	345	160
5	326	143	64
8	204	89	40
10	163	71	32

SHARE DIVIDENDS — AN ADD-ON TO SHARE PORTFOLIO

On an earlier page is described the "Share Portfolio" program, an excellent piece of software for the complete management of share holdings. Incidentally, it was not mentioned that this program is just as applicable to company share portfolios as it is to private ones. That program only managed the buying and selling of shares, it took no notice of Dividends. This present program has been written by the same author to handle the Dividend management of portfolios. At the same time the author has re-written the original program for disk. Accordingly, we now have available a disk program which handles shares and dividends (non-devisable) and two programs on tape, one for shares and one for dividends, which may be bought separately or together. The options in the Dividend program are as follows:

1. Enter new holding. This is self-explanatory, after the details are entered the new holding is automatically sorted into the existing file of holdings.
2. Display one holding. All data is displayed for a holding — Ex. Dividend date, Net Dividend, Date of Dividend Receipt, Amount, Total Dividends for the year to-date and a Total. Note that the total amount of dividends received from any holding is instantly available.
3. Display Full List. A list of all holdings, regardless of whether or not they have declared dividends is shown. Data included is the number of shares held, Ex. Dividend, Net Dividend, Dividend received and the amount.

4. Enter Dividend Data. Self-explanatory. Merely call up the holding and enter the dividend details. One of the useful conveniences in this program and the Share one is that it is never necessary to type in the exact holding name when calling it. Just a few letters will do.
5. Make New File. Whilst the file is being manipulated it resides in memory. After all alterations or whatever have been carried out a new file is written to tape/disk, using this command.
6. Outstanding Dividends. A very useful feature. Displays all holdings that have gone Ex. Dividend but payment has not been received. Each holding is shown one at a time.
7. Deletion. There are 2 options — either to delete an entire holding from the file or to delete the present year's details on all holdings ready for the following year.
8. Edit Any Item. This option allows you to change any item of information in any holding.

If you are running tape there is an additional option to input the tape data file. On disk this is done automatically at the start of the program. Whether you have tape or disk a demonstration data file is included so that you may get to know the program before using it on your own holdings.

DUEL-N-DROIDS — TERRIFIC FUN

A "second generation" Android Nim. Leo Christopherson has done it again! Two androids battle it out before your eyes with laser swords! There are two forms of play. In the first the player controls one android and the computer the other. The player must achieve a certain rank of skill as a swordsman to enable the android to go on to fight a tournament. The player's android is controlled by four keys and the higher the rank that the player can attain the better the chance that his android will beat the computer when it enters the tournament. Tournaments are of two types. In one, the player's android is pitted against an equally ranked android controlled by the computer. In the other the player's android fights against androids controlled by the computer of random ranking. Android Nim by Christopherson created something of a revolution in microcomputer games and Duel-N-Droids follows on in this same tradition. Excellent sound is provided in the program. Available on cassette for 16K machines and for the Video Genie. Disk version requires a minimum of 32K and one drive.

FEBRUARY LISTING

VISION LOAD — VLOAD YOUR CASSETTES RATHER THAN CLOAD

This program enables you to SEE your Basic programs as they load in from cassette. As the data feeds in to your memory it is also displayed on the screen! After the load, the program can be executed in the normal way so you can actually see whether or not you have got a good load. If the recorder volume is too high the display will increasingly be made up of all graphic characters. If the volume is too low there will be no display. The distinction between the two extremes is very pronounced, so the days of not being sure whether you have a good load until you list or try to run the program are over! Apart from the advantage of being able to see the loading level, it is rather good fun to be able to see and read the parts of the program which are in ASCII and it makes identification of the program immediate. The program is in machine code and occupies only two or three hundred bytes at the top of memory. It may be used as many times as you wish once you have loaded it. Yet another advantage is that each screen full represents 1K bytes, so by noting the number of times that the screen has been filled, gives you an accurate count of the length of the program. VLOAD is supplied in the three memory size versions on the one cassette or disk, so it is not necessary to relocate it if you upgrade your memory size. VLOAD may be stored and called from disk — simply load it in DOS and call it with the SYSTEM command in Basic. It does not, of course, operate when loading Basic programs from disk.

ENHANCED BASIC - A POWERFUL ADDITION TO LEVEL II

Enhanced Basic is an excellent addition for users operating Microsoft Level II in either the TRS-80 or Video Genie machines. As its name implies, it constitutes an enhancement of the interpreter giving the user a number of new commands. Probably its most important feature, however, is its ability to form a bridge between Basic and machine language. A number of microcomputer purchasers learn Basic and then wish to turn their attention to machine language or assembly language programs. This can be a difficult transition. EBAS, with its ability to change memory locations, include machine code routines without leaving Basic and its Monitor commands, constitutes a very valuable tool for such a transition. Furthermore, it sits at the bottom of memory and only occupies 2 ½ K or so of RAM. Even in a 16K machine, therefore, there is ample room. It adds the following capabilities to Level II.

Edit on Entry. This feature permits entry to and return from Level II Edit mode whilst entering a line. It is of particular use when entering a long line. If, for instance you are getting towards the end and you spot a mistake at the beginning (or wherever) of the line, simply hit the shift up arrow and you are in Level II Edit and all of its commands are available without having to break. One feature of this command we like is that after hitting the up arrow, if you type the letter "L" you will be taken to the start of the line in front of the line number and can edit the line number as well. This is very useful if you have inadvertantly used a line number which already exists.

Recall Buffers. There are two uses of this feature. Firstly you can recall the last entry made after hitting enter. If you are in the command mode of the machine and you have entered say a Poke statement and you need to use it again. Normally you would have to type it again but with this command you can simply recall it for further use. The second is to store any statement or string you wish away in a special buffer and then recall it at will. It stays in the buffer and may be recalled as often as you wish.

Cassette Motor Control. A command to switch the cassette recorder motor on or off. This is of particular application where you need to Rewind or Fast Forward from the keyboard.

Memory Size Change. One of the annoying features of the 80 is that you are only given one chance to set the memory reservation, when you first power up. If you decide in the middle of writing a program, that you want to change this reservation you must CSAVE your program, power up again and then CLOAD the program you are working on. This command allows you to change the reservation without loss of your program. It also permits you to reserve string storage space (normally done by CLEAR n) at the same time.

Close and Open. Allows you to "shut off" a basic program, carry out further inputs from the keyboard or tape and then remove the block so that the two programs are joined. The line numbers of the two programs must not conflict and the second program's lines must be numbered higher than the first. In other words, no merge is carried out.

Single Step and Breakpoint. This command allows you to single step through any basic program - either in execution or List. The Breakpoint command allows you to insert breakpoints in your program. This procedure is similar to the STOP and CONT commands available in Level II, with one all important difference. If you use STOP you have to edit the program to get rid of it and when you edit, all of the variables are cleared and lost; you have to RUN the program all over again. With EBAS the variables are not lost as it is not necessary to reRUN or edit.

Hex Constants and Conversion. Permits the use of constants in Hex notation. Thus POKE &H6FFF is the same as Poke 28671. Actually the "H" is optional, the above may also be written &6FFF. Conversions may be made freely between Hexadecimal and Decimal and normal mathematical functions carried out.

USR Calls. Unlimited USR calls are supported. A new command allows the transfer address to be specified with the call so that it is no longer necessary to Poke them in separately, as it is with Level II.

Instring function. The command INSTR is added to Level II. This command permits the search of one string to see if it contains

another. Thus searching a string ''Smith'' for another string ''mith'' will return an affirmative answer.
Line Input function. LINE INPUT expands the normal INPUT statement by accepting commas and quotes within the input. Any leading blanks are not ingnored as they are with INPUT but are incorporated into the inputted string. The normal ? is not displayed when the machine is waiting for keyboard input.
Define Funtion. The DEF FN statement is supported allowing you to create your own implicit functions. Once defined it is only necessary to call the function by name and it will be automatically performed. Both string and numeric functions may be defined.
Machine Language Routines in Basic. This important enhancement allows you to include machine language routines in Basic programs, so that they may be called at will without leaving Basic. On entry the Z80 registers are given the values of 3 Basic variables and on return the same variables (plus AF% for the AF register pair) are loaded with the then value of the registers. This funtion is particularly easy to use as it is only necessary to assign a string variable with the machine langauge routine in Hex and call it, to execute the routine.
Monitor Commands. Four monitor commands are included in EBAS to allow you to examine, edit and search ROM or RAM (although ROM obviously cannot be edited) and to make a machine code tape for later reloading under the System command, as follows:

CMD B Sections of ROM or RAM will be displayed on the screen in both Hex and ASCII notation. Eight bytes are displayed per screen line together with the appropriate addresses.
CMD E Hex data defined in quotes is inserted into RAM in place of the existing code.
CMD S Allows you to search any area of ROM or RAM for the occurence of a specified string of hex code. Of particular significance is that the search is not restricted to one byte or even a two byte word, which can be very important when looking for a sequence of bytes.
CMD P This command allows you to Punch out a machine code tape from any area of ROM or RAM.

These commands all return the user to Basic after completion. With the CMD B command the user can step through memory by toggling each line with the @ key.
Cassette Loading Improvements. Last but by no means least is a command which replaces the CLOAD of Level II and seems to pretty well eliminate the problem which has bugged TRS-80 owners since its introduction, namely the difficulties experienced with loading tapes other than those made on the machine in question. When using this command the volume setting of the recorder is made far less critical. We have carried out a number of tests with this command and have found that tapes which were completely unloadable under Level II CLOAD can now be loaded without difficulty. We do not maintain that this command gets rid of the bug altogether but we do say that since we have been using it we have not found a tape that we could not load and we get a large number of tapes from all over the country, made on a wide selection of TRS-80s. The command - LOAD - is used in exactly the same way as CLOAD. LOAD? will work with tapes CSAVEd under EBAS. This command also displays a warning if a program already exists in memory. Very useful if you type LOAD instead of CSAVE!

In addition, Enhanced Basic is available on disk and is compatible with disk Basic. It is fair to say that a number of the above commands are already resident in disk Basic, but we feel that this apparent drawback is more than compensated for by an added feature that the author has made in the disk version. This is the ability to Load and Save to and from disk. This is more important than it at first appears because EBAS is an enhancement of Level II, hence when it is called from disk it exits to Level II and not to disk Basic. When one bears in mind that it has two commands mentioned, it means that EBAS can load and save disk files from a Level II environment. So far as we know, it is the only program that enables this to be done. A large number of programs can be stored on disk, but will not run in a disk Basic environment. EBAS enables these files to be pulled off disk and run in Level II.

ANOTHER MAJOR PROGRAM FROM

NIGEL DIBBEN

PROTEXT - A NEW DATABASE PROGRAM

Nigel Dibben's programs, such as Matrix Manipulator and Graph Plotter, are not intended for beginners or non-experienced users and this one is no exception. They are complex and require the operator to use some thought but if you are prepared to do that, you will be rewarded with some excellent software. On page 30 the use and application of Databases is described very fully and it is not intended that we should go over that ground again herein. In general, the two programs perform the same functions, so it is upon the differences that we shall concentrate. If you have not already done so, we suggest that you read the description on pages 30 and 31 before continuing. One of the major advantages of this program is that it has a built in text editor. A Database is intended for the manipulation and filing of text and a built in editor is very convenient. When the editor is available to you in the program the cursor is converted to a flashing cursor, so that you always know when it is available - which incidentally is 90% of the time. The editor has seven commands; four of them are concerned with the four arrows on the keyboard. The right arrow inserts spaces to the right of the cursor, expanding the text automatically, and the left arrow does the same to the left. The up arrow moves the cursor non-destructively left and the down arrow right. Shift left arrow deletes the whole entry and the clear key aborts the entire entry. Finally, hitting the enter key accepts the entry and moves the program on to the next entry or function. One of the problems with using string functions extensively on the 80 is that periodically it has to do internal housekeeping, the effect of which is that the machine appears to hang up while it is busy sorting out its string space. To say the least this can be disconcerting for the user. Although the problem cannot be entirely eradicated - the poor thing has to keep its house in order somehow - this program goes a long way towards a solution. It forces the 80 to do a housekeeping more often. In other words little and often pauses rather than a gargantuan seizure! Each file is given a ''mark'' which is automatically stored with the file. These may be deleted or changed at will and provide a very efficient method of finding selected data. Suppose, for instance that you use the Database to construct a file of your gramaphone record collection and you decide that you would like to access the file by choosing all the Beethoven recordings you have but not his piano concertos. Simply instruct the program to mark accordingly and thereafter the selection will be made automatically. The same applies for say a business file of people who owe you money. You need to be able to pull out only those that have not paid in 30 days — mark accordingly and it will be done! If you are using NEWDOS you may use a provision which allows you to inspect the file directory for any disk, whilst staying in the program. This is not available with TRSDOS. Three methods of search are permitted - either for the exact entry, that is search Smith with Smith as the key, or for characters in the same position as entered, for instance ...th for Smith or finally floating, such as ith for Smith. Remaining differences between this program and the one on page 30 are quite numerous but are chiefly concerned with presentation and the inputting of data. In summary, there is little doubt that this is the more complete program but you do have to spend some time getting to know it. This program is entirely disk orientated. It has no application for cassette users.

PURCHASE LEDGER - FOR CASSETTE

With disks finding wider application every day, the cassette user in business has rather taken a back seat! This one and the following program are an attempt to rectify this inbalance. This Purchase Ledger keeps track of a small business's purchases from its various suppliers. With a 16K machine it will handle up to 400 entries per month from up to 30 different suppliers. Provision is made for inputting credit notes as well as invoices and entering VAT. All suppliers may be listed and an analysis made of the transactions with them. All invoices or credit notes may be listed and totalled. The cassette supplied has two versions of the program on it, one for those with a printer and one for those without. Throughout the messages are kept as cryptic as possible to allow for as much data storage space as possible. Data is of course saved to and retrieved from cassette. Any cassette business program must suffer from limitations but subject to that this program should prove to be a useful addition to a small business.

STOCK CONTROL - FOR CASSETTE

The same stipulations must be made for this program as for the one above. On the other hand, within those restrictions it gives the cassette business user an adequate program. As a matter of fact, this is a new program and we are stocking it to replace the American Inventory Management Programs. The program is able to service up to 200 stock items at one time where 8 characters are allowed for both the manufacturer or supplier and description of the item. This program enables the user to have considerable control over his stock and to obtain all of the information he should require. The Main Menu contains 6 options in addition to outputting and inputting data from the cassette as follows: Input Stock; this option is chosen to enter the details for each stock item. Edit Stock; for changing details of the stock holding. Check Stock; call up entries either by stock name or supplier. Value Stock; this gives the user the net stock value. VAT payable on it and the gross cost together with the same information for the retail. VAT Due; supplies figures for the VAT payable on the stock. Daily Register; this option is used to entered sales during the day whereupon the stock holding is adjusted accordingly and a running total of the amount of each item of stock bought by the customer is kept. Nine items of information are retained on record for each stock item; Product Name, Supplier, Net Cost, Retail, VAT Rate, No. in Stock, Minimum Stock Required, Date of Last Sale and Date of Last Check. As can be seen the program is comprehensive and written to English standards. We recommend it to business users who are "cutting their teeth" on cassette prior to upgrading to disk as it does have a number of features which are present in larger disk software and also to users who have smaller numbers of stock items which do not justify the expense of disk.

STOCK CONTROL - ALSO FOR DISK

Since the above was published in the early edition of the catalogue, we have had a number of requests for a simple stock control program on disk. The author has therefore transferred the cassette program over to disk so that it is not only resident on that media, but also loads and saves files to it. It therefore constitutes a straightforward simple disk stock control program.

MORSE CODE – LET THE COMPUTER TEACH YOU

This is a nifty little program for teaching you Morse Code. You will need a sound box or a small amplifier to connect to the grey plug which normally goes to the AUX input of your recorder. The program starts by asking what speed of code you want. Thereafter you have a number of choices. You can instruct the computer to output the code (at the speed you have set) for random letters, numbers or a mixture of both and optionally display the letter on the screen as the output is made. In the Training mode the computer will output a code and you have to type the correct key. If you type the wrong one the code will again be output until you get it right. In the Keyboard mode you type a key, the character will be displayed on the screen (optionally) and the code output. Regrettably we know nothing of Morse Code but it seems to us that this program would be an excellant way of learning! The speed may be adjusted at any time so that as you get more proficient you can increase the pace. This program is an excellent example of how a good idea can be converted into a useful piece of software, which in turn can give your 80 yet another application.

SMART TERMINAL – HOOK UP TO ANOTHER COMPUTER

This program intended for users who wish to use the 80 as a terminal to another computer, connected via the RS-232-C Interface and a Telephone Interface or Modem. Its basic purpose is to allow you to use the full capabilities of the 80 as a computer whilst also using it as a data communications terminal. When connected or "logged on" to another computer the 80 is in communication status. Any character typed at the 80's keyboard is automatically transmitted to the host computer via the interfaces and any character received from the host is displayed on the 80's VDU. When the interface is in full duplex mode, transmission may occur in either direction at any time. In half duplex mode, transmission may occur only in one direction at a time. In full duplex characters typed at the keyboard are displayed only after being "echoed" by the host. In half duplex the echo is provided by the modem so that the characters are displayed automatically. The Smart Terminal program supports many special features. In addition to supporting lower case (if your 80 has been modified) the program can also be set to receive graphics characters. Data received by the interface can be displayed, printed on the line printer and stored in memory. Memory files may be built and saved on cassette or on disk. Files may be loaded from tape or disk, stored in memory and then transmitted. The "prompt" character sent by the host to show that it is awaiting data – normally a ? – may be changed and redefined. This is not as frivolous as it sounds as problems can arise when prompt characters are being transmitted in the text. Smart Terminal will change the Baud Rate under its control without the necessity of opening up the Expansion Box to change the sense switches and the rate need not be one of those which can be set by the switch. An automatic test is continuously carried out internally, to make sure that the 232 interface is operating correctly and if it is not a warning is given. The test is carried out first thing when the program starts to execute, of course. In order that data may be held in memory for transmission or after reception, a memory buffer is created for the program. For a 16K machine this will be approximately 8K bytes long, 24K for a 32K and 40K for a 48K. In addition to being able to load the memory buffer from tape or disk, a unique feature of this program is the ability to type directly into the memory buffer so that the data so typed may be held for later transmission. A file may be written to tape or disk of the data typed in, which is very useful as you can keep a copy on disk or tape of what you have transmitted.
The program commands fall into two categories. Firstly, those that are operative whilst the machine is in communication status, which in the main are made up of controls for transmission or reception - Transmit line, End of Transmission, various tabulation controls, Line and Form feed and so on. Secondly, a sub-system which enables 25 commands for the program itself. These are accessed by a special command whilst in communication status and consist of the following:

LC	Upper/lower case	RF	Read disk file	CK	Change control key
UC	Upper case only	SF	Save disk file	CP	Change prompt character
EM	Erase Memory	RC	Read cassette	TR	Automatic transmission
TM	Type to Memory	SC	Save cassette	NT	Stop automatic transmission
BR	Backspace record	RM	RS232 to memory	LP	Line print
FR	Forward space record	NR	Stop RS232 to memory	NP	Line print off
CL	Display current line	ST	Display memory statistics	EX	Exit to Basic
L1	Set to first memory line	CB	Change baud rate	OS	Exit to DOS
SW	Reset sense switches				

This program therefore constitutes the software required to use your 80 as a computer terminal. As must be obvious from the above, an RS-232-C hardware interface (Tandy Cat. No.26-1145) is also required.

ANDROID NIM – WITH SOUND

The game of Nim needs little introduction. It used to be played with matchsticks at one time. The idea is that there are a set number of objects and you and your opponent take turns removing them. The object of the game is to so remove the objects that you are left with the last one to remove. In this version the "objects" are cute little robots. In fact the graphics are so good that winning becomes of secondary importance to watching the androids' antics as they gradually get annihilated. The sound effects are as good as the graphics and cause the player to break down with concern for the poor little things! incidentally, both this program and the one following (which is from the same stable) intentionally will not list properly after a good load. It must therefore be played in order to ascertain that the load is good.

BEEWARY – ALSO WITH SOUND

Although the idea of this game is entirely different to the above, the graphics and sound effects are equally as good. The object of the game is simple, you have control of a little bee which moves around the top half of the screen. At the bottom is probably the most sadistic looking spider one has ever seen! If the bee stings the spider in just the right spot, the spider will die - it takes a good minute to do so, all the while lamenting on the cruelty of the world. On the other hand if the bee gets within range of the clutches of the spider, he will be eaten - again with suitable comments! See the comments above listing the program. Both games are extremely well done, they are simply fun games.

DIRECTION FINDER – FOR PILOTS, TRAVELLERS AND THE SIMPLY CURIOUS

Although this program probably will have most appeal for pilots and travellers, it also has an educational content for the youngsters and those interested in geography. For two stated points it will give the following information:

1. Distance in nautical miles (knots.)
2. Distance in statute miles.
3. Distance in kilometres.
4. The compass bearing from the one to the other expressed in degrees.
5. The approximate compass direction - South West, North East etc.
6. A graphical representation of the compass rose with the postions indicated.

The two points may be entered in two ways. Firstly, stored in data lines are the latitudes and longitudes of over 125 major cities in the world. With these cities it is only necessary to enter their names to obtain the information. For smaller towns you may enter the latitude and longitude and the same information will be provided. Additional features are:

1. Distances and bearings plus the time taken.
2. Table of distances and times on a multi leg voyage.
3. Bearing, speed and time taken, corrected for wind.
4. A list of the cities and their data on file.

Although we have emphasised the global aspects of this program, we should also say that it will be of use to car travellers in England as well. A large number of the cities or towns on file are in the British Isles, even John O'Groats and Landsend! The accuracy of the program is good although some errors are bound to creep in, due to the machine itself.

LABYRYNTH – AN EXCELLENT MAZE GAME

Similar to a maze game recently published for another micro in Computing Today, this is one of the best we have ever seen. Normally with maze games, the player is given the plan view – as if he were looking down from the top – and one has to guide a "third party" with various control keys. Minefield (P.19) or Amazin (P.6) are good examples. However, in this game it is exactly as if you are in the maze yourself. Walls, doors and openings are shown and you have to make **your own** way through. Nigel Dibben, who wrote the program, (he has a warped wit, at the start rather than tell you that the program is initializing, you are told to wait whilst the skeletons are swept out of the maze) has given the player the option of using either of two aids. The first, called footprints, will tell you whether or not you have been in a corridor before and the second shows you continuously the direction of North. You may select both aids or either or none. Controls are supplied so that you may turn and look in any of 3 directions and of course a control to move in the direction in which you are looking. The maze is made up of 16 × 16 cells – the word is chosen deliberately!

APRIL LISTING

SBT – STRUCTURED BASIC TRANSLATOR

Basic, excellent as it is, has one or two failings which we feel are corrected by this new program. In machine language programming and indeed in programmable pocket calculators even, it is possible to label an address. In other words, rather than saying GOTO or GOSUB 100, the contents of what would be line 100 are labelled and the GOTO and GOSUBs are directed to the label rather than to the line number. If you think about this, it is a really big advantage because one doesn't have to know, in fact it is totally unimportant, where the contents of the sub-routine is. Another drawback of Basic is that it is number structured. As we all know, it is imperative that a Basic line be preceded by a number. If it is not, quite a few terrible things can happen. This is a very free system, though it does cause problems. It is convenient in that line numbers have to be spaced to allow for later insertions, but most importantly, again with GOTOs and GOSUBs, one has to know the line number when one writes the directing line. Finally, the other big deficiency of Basic is that remark statements (REM) take up space in the program. They are, in fact, part of the program itself. The tendency, therefore, is either to omit them because being ASCII letters they take up a lot of space or, one keeps them as short as possible, with the result that when you go back to a program a year or so after you have written it, it is often very difficult to understand. SBT gets rid of all these deficiencies. It has some similarities in structure to machine language programming, but yet retains the ease of the Basic syntax. To use SBT you "assemble" a code in an editor in a similar way to machine language. You do not use any line numbers and the branches are to labels rather than to line numbers. Furthermore, comments in the program are not assembled into the resulting program, but do remain in the source program. Hence, if you have to return to look at the program later, it is very easy to understand what you originally did, but yet comments do not take up any room in the actual operative program. After the program has been composed in the editor, it is assembled or translated by SBT itself and the result is a normal Basic program with all of the line numbers inserted and all of the branches correctly referenced by line number. Broadly speaking, therefore, it is possible to say that one has the ease of writing a program in an editor with subsequent assembly, and yet finishes up with an ordinary Basic program. SBT is disk orientated in that the programs are written to disk and it is supplied on disk.

EMPEROR – TRY RUNNING THE ROMAN EMPIRE

Occasionally a game comes along which is of such immensity that it is almost impossible to describe. Such a game is "Emperor". It is entirely a game of strategy, played on a graphic map of the Roman Empire as it was in the first four centuries A.D. The player takes the part of the Emperor and he must pit his wits and forces against invading barbarians, rebellious provincials and treacherous Roman Generals. Even the Plebs of Rome will have to be placated with bread and circuses if the Emperor is to keep his head and his throne. If he can last out for the first eight years of the game, he is judged on the state of the Empire at the end of that time. There are three levels of play. Depending upon his choice, the Emperor has to guide the Empire through the first, third and fourth centuries. To win in the first century he must expand the Empire by two provinces, in the third he must maintain his Empire intact and in the fourth he must lose not more than two Provinces. For each Province the player is given three items of information, the number of loyal Legions, the number of revolting Legions and the number of Barbarian Invaders or Local Rebels. During play Legions must be raised, taxes inflicted and troops moved. The choice of Generals can be very critical – some are loyal and good fighters, some are neither. Battles must be fought and invasions repelled. All the while the citizens in Rome must be kept happy and – you must keep an eye on those Barbarians in Britannia!

DSM – A RANDOM FILE DISK SORT/MERGE

An excellent new utility from Racet Computes available for the Model I and Model II TRS-80. DSM is a self-contained system written entirely in machine language ready for immediate use. It has the following powerful features: it sorts large files which may be contained on a number of diskettes on a minimum one drive Model II, two drive Model I disk system. Unlike other Sort programs, such as Racet's own GSF, this program physically re-arranges the records and no key files are required. The program sorts random files created by Basic including sub-records; in other words, if a buffer is split up into a number of logical records, this may be sorted as well. DSM sorts on one or more fields in both ascending and descending order; the fields may be either characters, binary integer, or floating point. Provision is made for optional output field deletion, re-arrangement and padding. The Sorting commands can be saved for reuse in production applications. DSM is ideal for large mailing lists, inventory control and other business applications. Sort times are very fast, varying from 33 seconds for 16K, up to 2,569 seconds for 680K. These times are for Model I 48K with four drives. Model II times are twice as fast. These times will, of course, vary with the types of sort and system configurations. One of the most important features of DSM is that it is extremely easy to use, and requires only a few simple commands for a given sort application. Various default values are provided for user convenience. As usual with Racet software, a full manual is provided.

SYSDMP – STORE BASIC PROGRAMS IN SYSTEM FORMAT PLUS VARIABLES

This is a very useful utility which will save a Basic program to tape in a form which can be accessed by the SYSTEM command. But it goes far beyond that, for it will also save the database being used by the Basic program, that is to say all current values of variables, arrays and strings together with the contents of the Stack. It will also save to tape (optional) the contents of the display at the time of the save. Finally, it saves any resident machine code programs. A Keyboard Debounce program is automatically included. A very important feature is that at the end of the dump to cassette, the computer is returned to the same state that it was in prior to the start of the dump and if the Basic program was running at that time, it will continue from the point at which it was suspended. When the tape is subsequently reloaded using the SYSTEM command, the computer is again restored to the state at which it was in immediately prior to the dump and the Basic program, with its database intact, will continue from the point at which it was originally suspended. If the display contents were included in the dump, the display is completely restored to its original state and even the cursor is reset to its former position. If the display contents were not included in the dump, then after the reload the screen is cleared and the cursor is positioned at the top left-hand corner. The usefulness of this utility is evident from the foregoing description, but one factor which may not be evident is that all System tapes are loaded with a checksum facility which, of course, makes sure that the load was successful. Basic programs do not normally carry out this checksum. It is hard to give a list of the applications of this program as they are so wide, but in general terms the user has the option to stop the running of a program and save everything to tape so that he may return at a later time and be able to pick-up exactly where he left off. One obvious application is the storing of lengthy games or application programs. There is now no excuse for staying up all night in order to complete the running of a particular program! Further applications that come to mind are in the debugging of Basic programs. Quite often a user is part way through debugging a program, but wishes to put the program "to bed" with the variables intact. This he can now do. SYSDMP is loaded as a System program itself and resides at the top of the memory. It only occupies about 500 bytes. Once loaded it can be called whenever required.

SYSTEM SAVERS – FOR SAVING SYSTEM FORMAT PROGRAMS

This package contains two programs, TDISK and FLEXL. They are both concerned with saving system format programs. The first saves them to disk and the second to tape. FLEXL is very similar to the program COPSYS or COP16K, which we already carry. It is, therefore, to a large extent a duplication. However, TDISK is such an excellent program that it makes this package well worth buying, particularly for customers using disks. One of the big problems in saving system format programs to disk is that a number of them overlap the DOS operating area in memory. In order to be used, therefore, they must be offset from this area. A number of programs carry out this chore with varying degrees of success. LMOFFSET, for instance, which is supplied with NEWDOS+, will offset the program, but does not carry out any relocation. Hence, although it is of assistance in getting the program onto disk, it does not help when it comes to actually using the software, unless one is prepared to do so in a Level II environment. TDISK is the only program that we have come across which (with all of the programs we have tried) infallibly moves a conflicting system program to another area and enables execution from that area. The Adventure tapes, for instance, have always been difficult to move, but TDISK seems to put them on disk and permit their being called from disk without any difficulty. The same remarks apply to Tandy Editor/Assembler and other programs including SARGON I. In summary, therefore, although FLEXL is a perfectly good program to use for making back-up copies of system format tapes, we are principally offering this package for the TDISK facility.

TELEPHONE INDEX – AN ADDRESS ETC. FILE SYSTEM

This program is essentially a dedicated disk data filing system, the purpose of which is to enable the user to file away on disk and thereafter access the following information: company name, contact, address, telephone number and a code. Full functions are included for creating, amending, deleting and searching records quickly and easily. An INSTRING function is used during the search, so precise spelling is not required. In order to read a record previously filed, it is only necessary to type the name of the company and the data appropriate to that company will be displayed. If more than one company exists with the same name, then a list will be displayed and the user is asked to make a selection. After the particular record required has been found and displayed on the screen, any part of it may be easily amended by typing in the new data. Records may be deleted. The search function is comprehensive and permits the user to use any of the fields in the record as a key. In other words, it is not only possible to search for all the Smith's, but also to search for, for instance, all companies in London. This is particularly useful when used with the code field, as a user can construct his own code and pull out any company on file with that code. It is possible for the user to change the field names quite easily so that the program can be made to fit his own circumstances, but if a customer has got this in mind, he might feel that the more generalized database programs shown elsewhere in the catalogue would be a better choice.

FINANCIAL ANALYSIS – A BUSINESS TOOL

This program enables businesses to handle their financial activities in an efficient manner. It carries out the following functions:

internal rate of return
present value of given cash flow
present value to future value and future value to present value
annuities from required present value
time span of payments

The program uses well-known business equations, which are available from any good text book and we will not go in to them herein. The program uses a rather unique method of memory management using a "work sheet" which contains the result of the latest computation or values input from the keyboard. After computation is complete, menu options allow the "work sheet" to be stored in a "memory" capable of holding up to ten sets of values. This work sheet can be listed or printed and also saved to disk. The "memories" are named (up to six characters) and can be given a reference number as well. For instance, a memory may be called MORTGE number one. On revision the reference number can be changed to two and so on. This "work sheet" method is extremely versatile and enables otherwise complicated calculations to be carried out with the least trouble. Another nice program from Nigel Dibben.

REGRESS – MULTIPLE REGRESSION

Multiple regression is a form of statistical analysis and is a method of estimating various unknown constants or parameters occurring in a function which relates to several variables. For instance, using Multiple Regression the eventual adult height of (say) a five year old boy might be quite well predicted with three variables such as present height, his father's height and his mother's height. A random sample of the heights of other five year old boys, together with those of their parents could be prepared and then some years later their adult heights measured. Then one would have sufficient data with which to construct a regression. The program uses a Matrix within which to enter the data to be correlated, the size of which is really only restricted to the practicability of the number of columns and rows. After the Matrix has been entered, it may be amended or stored on disk and a multiple regression calculation carried out on it.

SCRIPSIT A PROFESSIONAL WORD PROCESSOR

In previous versions of this catalogue we have been able, to some extent, to describe earlier versions of Scripsit. It is now, however, with the advent of Super Scripsit becoming such a large and important piece of software, that we do not have the space to describe it in full. In any event, it is probably so well-known that it requires little comment from us. Perhaps the best bet is for us simply to quote the Tandy writeup on the Model II version:

> "This powerful word processing system for the TRS-80 Model II will speed up any job you're now doing on a typewriter. It's easy to learn and use, with "plain English" prompts and menus that put advanced editing capabilities at your fingertips! Letters, reports and manuscripts can be written and edited right on the display screen. Then, with an optional printer, you can print as many "letter perfect" copies as you want at an incredible 500-plus words per minute. Frequently used reports, forms or paragraphs can be stored on disk for use again and again – and updated at any time. Scripsit includes automatic block moving and duplication, easy page numbering and renumbering, and an information line that keeps track of cursor position, margins, line spacing and page number. A Global Search mode will locate a specified word wherever it occurs in your text for selective editing. Floating format and reverse indentation make it easy to set up tables and special formats. You can define up to 20 keys to reprint words and phrases or to access special functions. Also store up to 11 formats that you use often and select the one you want with just a few keystrokes. Scripsit offers full headers and footers, as well as underlining, subscripts, superscripts and bold face (depending on the printer you choose). Scripsit's "background" feature even lets you print one document while you are typing or editing a different one. Stores up to 320,000 characters on each diskette with a one-disk Model II System – plus up to 400,000 characters on each external drive you add to your Model II System. Greatly increase storage capacity with a TRS-80 Hard Disk System. Load and store ASCII text files, too. Includes a superb manual and self-paced training course on audio cassette tape.

UTILITY 1 – EDITOR/ASSEMBLER, DISASSEMBLER AND SUPERZAP

This is a composite disk which contains the above three utilities for the Model II. The Editor Assembler section is in fact a Model II disk version of the Microsoft Editor Assembler Plus for the Model I described elsewhere in the catalogue. The package includes a macro conditional assembly capability, in memory compilation and built in dynamic debug facility. The Disassembler enables disassembly into Z-80 mnemonics. The display may be continuous, or page by page, and will disassemble either from main memory or disk. The disassembly may also be printed out to a line printer if required. The Superzap utility is a modification of the one supplied for NEWDOS + and enables the user to have complete access to the contents of the disk with the exception of track 0. The disk contents may be displayed or printed out to a line printer and modifications may be carried out to the contents of the disk.

UTILITY 2 – REPLACEMENT DEBUG ETC. FOR THE MODEL II

This software consists of eight separate utilities as follows: –
REPLACEMENT DEBUG: A replacement for the DEBUG program in Tandy TRSDOS. It features 35 separate basic functions plus 8 Edit commands. Single step and multiple step. Automatic trace of logic flow with trace printing and trace of instructions greater than stack pointer values, plus rapid trace. Subroutine call. Automatic program looping. Dynamic disassembly of instructions.
DIRECTORY CATALOGUE SYSTEM: This function builds a directory of directories. Sorts by disk or by program abbreviation or full form. Full form includes dates of creation and last update together with other directory data. "Wild card" select options with masks. A consolidation of directories and selection on file name and extension. Directory catalogue files may be saved and loaded and new data may be concatenated.
DIRECTORY FIX: Automatic repair of Hash Index Tables together with listing and flagging of directory errors.
EXTENDED COPY: This feature copies multiple files with a single command using masked select options. The source disk may be a non-operative system disk. All files may be recovered and invalid sectors itemised even though the copy continues. Files may be merged with or without replacement.
SUPERZAP: This feature is essentially the same as the one contained in the earlier utilities disk and in NEWDOS + (page 12). It includes display, print, modify of standard TRSDOS diskettes. Full screen edit mode and automatic repeat scan and print. Disk sectors may be copied to the same or another drive.
DISK IDENTIFICATION: A utility to enable the user to change any disk identification.
EXTENDED CREATE: There have been some difficulties with the original Create utility in TRSDOS. These have been eradicated in this new version and the file may now be initialised to its end.

GSF – GENERAL SUB-ROUTINE FACILITY

The Model I GSF is described elsewhere in the catalogue. The Model II version contains the following features.

1. An in-memory Sort routine, whereby several single dimension arrays of any type may be sorted into either ascending or descending order. A number of keys may be used at the same time and may be allocated sort instructions in either direction. Hence, one array may be sorted in an ascending direction, whilst another may be sorted in a descending direction, both at the same time.
2. Another in-memory Sort, this time for sorting a single string array. The advantage of this sort is that the user may stipulate the part of the array upon which the sort may be operated. A number of keys may be used and the location and length of the key may be stipulated. Hence, if one had a string array whereby each element consisted of four blocks of four characters, then any letter in any block may be stipulated as a key.
3. The Model II does not support the PEEK and POKE statements. GSF rectifies this by using the USR routines to POKE or PEEK a byte into the memory, and also to POKE a word as well. Hence, both bytes and words may be poked and bytes may be peeked. In both of the pokes, the previous word or byte is returned to the calling program. Two parameters are used in the procedure, the address to be poked or peeked and, in the case of poking, the new contents of the address required.

4. Compress the data. The purpose of this sub-routine is to compress a copy of any area in memory by eliminating repeated characters, such as (but not restricted to) blanks.
5. Decompress the data. Reverse of the above.
6. Move data blocks. This sub-routine will move data from one block to another. This is particularly useful for setting one array equal to another, moving data or arrays into protected memory and for setting all elements of an array to the same value.

IMPORTANT

There are a large multiplicity of different types of disk drives available for the TRS-80 and Genie machines. The most common numbers of tracks are 35, 40, 77 and 80. So far as actually reading and writing is concerned, the first two are compatible with each other as are the last two. The size of head is different between a 40 track and an 80 track and hence they are not compatible. We have elected to adopt the standard issued by Tandy, that is to say, 5¼" disks for the Model I have 35 tracks single density, 5¼" disks for the Model II have 40 tracks double density, and 8" disks for the Model II have 77 tracks double density. It is upon these standard disks that our programs are normally supplied. Non standard configurations can, however, be supplied at extra cost. For example:

Model I	40 or 80 track single density 35, 40 or 80 track double density
Model III	80 track single/double density 80 track double density double sided

The charge for any of the non standards is £5 plus £2.50 for the disk. It should be noted that this charge is simply for manufacturing the disk with or without a DOS on it. The terms and conditions at the end of the Index should be read for the charges for putting individual programs onto disks that do not normally reside there.

It is very important for users to be aware that the Model I TRSDOS is not capable of accessing track densities in excess of 40. Accordingly, if customers require a DOS on an 80 track disk they must show us that they own either LDOS, NEWDOS+ or NEWDOS 80. A stripped down version will then be placed on the disk for single drive owners, if requested. Customers who own more than one drive will have their software supplied on a formatted disk. Even so, we should be told what DOS is to be used to ensure compatibility.

LDOS is capable of supporting a multiplicity of track densities and configurations. With some very high densities it is important that the DOS used should be "optimised", in other words, that the System files, in particular, should cluster around the directory. It takes a comparatively long time on, say, an 80 track disk for the head to travel from track 40 to the inside track. If a System file that is frequently used, is allocated track 80, then the whole system can slow down quite considerably. The original LDOS disk, of course, is optimised, but customers who require optimisation or the supply of the more exotic densities and configurations should consult us.

JUNE LISTING

PINBALL – COMPLETE WITH FLIPPERS

This is an extremely good graphic representation of a normal pinball machine in so far as it can be represented on the computer screen. The usual arcade rollovers and bumpers are present and the flippers which guard the exit are particularly life like. A theoretical maximum of 299,990 points are available, but as far as we know, this has never been achieved. A good player will score about 30,000 and an excellent player will score about 50,000. The great ability of this program is that it has been written to give as close a representation of a pinball machine as probably is possible. For instance, on a real machine the ball is projected by a spring activated plunger. If the plunger is released at the maximum compression of the spring, the ball goes faster and vice versa. Such is also the case in this program. If the ball is "released" at the bottom of the plunger travel it will go faster than if it is released at the top of its travel. The ball will gain speed when it hits the bumpers and will decrease in speed as it "dribbles" down the side. Again as in the original, if the ball is hit by the end of the flipper it will gain more momentum than if it is hit at the base. A particularly lifelike feature is the fact that if the ball has a straight, unobstructed travel up the machine, it will gradually lose momentum and then gain it as it comes back down. Furthermore the ball can be given a spin if it hits obstructions at particular angles. All in all, an extremely lifelike simulation which really has to be played to be appreciated. A "Bermuda Square" appears from time to time without warning and if your ball happens to get trapped inside, it will ricochet from side to side and gain speed and points. Hitting various bumpers and lights, of course, give you varying quantities of points. Available on cassette or disk.

SOUND – A MACHINE LANGUAGE SUBROUTINE

This is a very simple, but nonetheless, useful and interesting program which is loaded into the top of memory and then called from any Basic program. Use of this subroutine enables a programmer to create essentially any sound to give more dramatic effect to his Basic program. Six parameters may be set as follows:–

1. To determine the initial frequency of the sound, i.e. its pitch.
2. To set the duration of the tone in time.
3. To set the number of times that the tone is to be repeated.
4. To set the first change of tone.
5. To set the second change of tone.
6. To set the third change of tone.

In order to enable the purchaser to get an idea of how the subroutine should be used, a short Basic program is included on the tape by which the user can choose the various parameters mentioned above and listen to the resulting sound. Obviously, a sound box has to be connected to the larger grey plug going to the cassette in order to hear the sound. We have, incidentally, received a number of queries about sound boxes. A sound box is any simple amplifier. We have available free, a circuit diagram of one such suitable unit, which only uses one integrated circuit and a couple of capacitors with a speaker. Alternatively, almost any pre-built transistor amplifier can be used and these are available at most electronic hobby shops. So far as we know the requirements are completely uncritical and we know of one customer who "plays" his computer through his hi-fi system.

CHEQUE BOOK – A SIMPLE APPROACH TO HOME FINANCES

The Home Budget program (page 24 of old style catalogue) was extremely comprehensive and therefore, in some respects, moderately complex to use. This program, on the other hand, is very straightforward and yet we feel gives the average customer probably most of what he would need in managing his finances. The program is divided into four parts. The first is a cheque book account which allows a maximum of 100 entries per file. Options include adding debits and credit, reading current data, making alterations, recording a new data file, reading a data file and it essentially maintains a running bank statement. The actual display is split into four headings of item, debit, credit and balance. As entries are made, so the balance is changed. Existing data may be stored either on cassette or on disk. The second part carries out mortgage calculations and supplies the usual information as to monthly payments, interest and tax gain per week or month. This information may be displayed either as a continuous table or as a summary. The third section of the program is concerned with investments. It asks for the investment amount, the interest rate and the period and supplies the amount at the end of the investment and the total profit that will be made. The final section is designed to calculate the investment potential of regular monthly payments into a SAYE account. Input is the monthly payment interest rate and expected term and the program caters for single persons or a married couple. All in all a nice, compact, straightforward program.

MUSIC MASTER – AN EXHAUSTIVE MUSIC PROGRAM

This is a fascinating program for those of you who are musically inclined. There have been a number of music programs written for the TRS-80, some just to convert the keyboard into a piano or organ and some which help music to be composed. This program combines all of these facilities into one program. In addition, some excellent graphics are provided of representations of a piano keyboard and a stave. Obviously to get the most from this program, it is necessary to have a sound box connected to the auxiliary cassette plug. The program is broadly divided into four parts and we will deal with them separately. The first part which is called "Music Master" calls upon the user to input a chord or note. When this is done the computer will play the note through the sound box and show its position on the keyboard and a stave display of it. A chord may be entered after the note. In addition to the above, various items of information are supplied with regard to the note which has been entered. These include the relative minor, the number of sharps or flats, the notes affected, the dominant 7th and the dominant 7th of minor. Incidentally, it may be convenient at this stage to say that if any of this description does not make too much sense, it does not in any way reflect on the quality of the program or the skill of its author. Merely a lack of knowledge on our part! The next section of the program is concerned with the composition of music. The graphic display of the keyboard is overlaid with various letters and the user is called upon to enter his composition. After completion it is displayed and played on the sound box. Full control is provided for note duration and pauses. Once the tune is perfected, it may be recalled at any time and may also be permanently included into the program. The third section, video master, is itself divided into two. The program comes with five tunes already programmed into it. These may be played on the sound box and will be displayed on the screen. The second section gives the user the ability to convert sounds going into the recorder either from its internal microphone or from an external source plugged into the AUX jack into a graphic display. The program provides for fast transposing from one key to another. As can be seen from the above, this is a very comprehensive program and is available on tape or disk.

TRSDOS 40 TRACK PATCH

Tandy are now supplying Teac Drives instead of Micropolis, which are capable of accessing 40 tracks. We already, of course, supply NEWDOS for 40 tracks, but as an added service for our customers, we have executed the necessary patches on TRSDOS and any customers who sends in an original Tandy 2.3 or 2.2 TRSDOS disk, may have it re-recorded by us for a nominal charge of £5.00, including VAT and postage.

NEW STAR TREK

There are many versions of this game, we feel that this is the best! It has recently been improved to provide better graphics - you even see the Enterprise flying through space between galaxies! – and an easier operating mode. Of particular significance is the method of steering (if that is the correct word) the Enterprise. In other versions the direction data is input by a number. In this version it is actually possible to visually direct the course to be taken by means of a "compass" indicator. Rather than entering the various commands by number, an arrow is moved to the command required. Altogether these changes provide a very stimulating and realistic effect. You get the impression that you really are in command of a space ship! The guidlines of the game remain the same. As Commander of the Enterprise you are directed to explore the universe and hunt out Klingon Battle Cruisers. The universe is comprised of 192 quadrants containing planets, star systems, pulsars, black holes and Class 0 stars. The quadrants are three dimensional - 8 x 8 x 3. These are again divided into sectors. The weapon systems available are Phasers and Photon Torpedoes. Power systems are Warp and Impulse. You have the use of two computers, Science and Ships'. Long and Short range sensors are at your command together with Damage Control and Status Report. If you are going to play Star Trek you may as well play the best!

"TRS-80 DISK AND OTHER MYSTERIES"

This is the much heralded book by H. C. Pennington. It is a good book but there are one or two reservations which we feel should be made about it. First of all, although the title says "and other mysteries" this is essentially a book for disk users. There are some comments relevant to the tape user but they are few and far between and certainly do not warrant its purchase. Secondly it is almost entirely orientated towards Newdos+, if you have the straight Newdos, without the utilities and particularly Superzap, or you use TRSDOS then the value of the book is lessened considerably. Finally, it is a book for the specialist user who has a large interest in the inner workings of his disk system. Subject to these reservations it is of very real value in explaining the intricacies of the method in which data is stored on the disk and in particular the disk directory entries. Unless you have worked it out for yourself, the book is probably indispensable if you want to know how to save corrupted or killed files. The disks are discussed from the point of view of the user with such interests, not from the viewpoint of the programmer or one interested in the mechanical and electronic aspects of the drives. We have stocked the book for a couple of months now, it just missed the February listing, and a number of customers have been delighted with it. We thought however that we should mention the reservations which we had on first reading it.

MORSE CODE COMMUNICATOR – A SOFTWARE APPROACH

This is a fascinating program that will not only have application for radio amateurs, but also for any shortwave listener who has always wondered what those funny dits and dahs mean that come over the various shortwave bands. Indeed it is perfectly possible with this program to decode the Russian news service, TASS. Not having done it we are not quite sure whether or not one needs a knowledge of Russian. But there are a great number of transmissions on the air waves which are in morse code and to be able to read them is quite a fascinating pastime. To the best of our knowledge, previous approaches to this subject have been by way of hardware interfaces. This program takes an entirely software approach and all inputs are through the black EAR lead and outputs through the grey AUX lead. Input or output may be from or to a receiver transmitter or straight from tape. The interfacing between the computer and the receiver is through the cassette recorder. Probably the easiest way is simply to hold back the record inhibit lever on the recorder, press the play and record buttons together and remove any microphone dummy plugs. The internal microphone in the recorder is thereby activated and any morse transmission which it picks up will be processed. This is probably not the best method as there is almost bound to be background noise and the preferred system would be to simply connect a lead from the radio to either the AUX or MIC (depending on strength). A further method would be to plug the black lead which normally goes into the EAR socket into the ear piece socket on the receiver. You must when using this system, however, be certain that the receiver output is an ear piece type. There are a number of other methods including simply tape-recording the transmission and playing it back through the recorder. So far as output is concerned, generated morse is sent from the computer through the grey AUX lead and this may be used either to make a tape-recording for later transmission or output it directly to the transmitter. Obviously we cannot go into too many details of this as it will depend upon the type of transmitter being used. Various notes are contained in the documentation accompanying the program which enable the pitch of the output to be changed to suit various transmitters. Essentially the program is a morse code generator or decoder with input and output in English. Maximum speed in either mode is 28 words per minute and all morse shorthand is supported and correctly displayed. Other features include variable speed on transmission/generators of morse code either direct from English inputting from the keyboard or by typing a full screenful whereupon the entire page will be generated at one time.

GOMOKO – AN ANCIENT ORIENTAL GAME

We are not too sure of the origination of this game. It is, in some ways, very similar to the Chinese game of GO and it is played on a similar board. On the other hand, it also has some similarities to Othello. The author, Dr. G. Shafto, who also wrote the Draughts program in this list and mentioned elsewhere in this list, says it is an ancient, oriental game and he should certainly know! Anyway, the game is played on a rectangular grid, the size of which may be chosen by the user. The maximum size is 20 wide by 14 high. Tokens are placed on the grid by the user and the computer in turn, and the first player to get five of his tokens in a row is the winner. A simple game perhaps, but fascinating to play and greatly enhanced by the feature of being able to choose the size of board. This is a Basic program for 16K tape or disk.

DRAUGHTS – AN EXCELLENT COMPUTER VERSION OF THIS POPULAR GAME

For some unknown reason there have not been any really good draughts games for the TRS-80. There have been one or two "Checkers" in the States, but the quality is not as good as it could be. This version contains excellent graphics. The board, in fact, is almost identical to that used in the Sargon Chess game. All of the standard rules apply, including Huffing and Crowning and six levels of play are supplied. So far as we can see, the computer is almost unbeatable at the highest level. A particularly interesting feature of these levels is that if particular levels are chosen, the computer will play a very aggressive game, taking its opponent's pieces almost regardless of the future strategy. Particular attention has been paid by the author to the end game and, all in all, it is a very enjoyable computer game. It has general appeal, but perhaps the emphasis will be upon those users who want a strategy game similar to Chess, but who do not have the amount of time that a good computer Chess game requires. The program is, of course, written in machine language and the computer response time varies from one second to eighty seconds, depending on the level of play chosen. Incidentally, levels of play can be changed during the game. Two further features of this program are that it is possible to set up specific board games for consideration and it is also possible to cancel a previous move. Available on cassette for 16K or more Level II and on disk for 32K or greater memory size.

POOLS – TRY YOUR LUCK

Life is so serious in business these days that we have to start the description of this program by making a disclaimer of liability! Neither we, nor the author, in any way, shape or form warrant or suggest that the use of this program will win you a fortune on the football pools, or indeed will win you anything. We would, however, suggest in all seriousness that it will probably increase your chances. The program forecasts the likeliest results based on the current team points to be found in the football league tables. Using these tables, plus some bias, the program will forecast the likeliest draws, home or away wins, depending on which type forecast you require. We mentioned "bias" because the program enables the user to enter a bias factor based upon his own judgement of current events. If, for instance, a well known goal scorer for one side has broken his leg and will not be playing, a suitable bias may be entered. It is entered on a scale of 1 to 9, which will be represented approximately by the values shown below: –

DOWN		UP	
No.	%	No.	%
4	-5	6	+5
3	-10	7	+10
2	-20	8	+20
1	-50	9	+50

The entry 5 is equivalent to par performance and need not be used, for if no number is entered, then no bias takes place. Entry of the teams and their points is, of course, somewhat boring, but it has been made as interesting as possible with a nice, neat, graphic display and the user has a number of options to make corrections and list the matches. When the match entries have been entered, the user may call up the most probable results, i.e. a draw, an away win or home win. He may also call upon the computer to calculate and read out the most likeliest draws. The final alternative is to calculate and display four draws, twelve homes and six aways. An interesting program, the seriousness or otherwise of which can only be shown by a substantial win.

IMON – A NEW MONITOR

As we already stock four Monitors it may well be asked why we should stock another. The answer is that this one has rather different features and applications to Monitors 1 - 4. They are compact Monitors aimed at users who wish to use a Monitor in conjunction with Basic programs, or at least with the capability of loading both the Monitor and a fair sized Basic program into memory at the same time. IMON is aimed more at the machine language programmer who only needs 3 or 4K usable memory (in 16K machines) in addition to the Monitor but who requires some additional commands, particularly applicable to machine language programming. In the following list of IMON commands therefore, the emphasis will be on those commands which are present in IMON but not in Monitors 1 - 4, which are marked with an asterisk.

1 ASCII display of memory. What we find an attractive feature is that a line feed is used as a terminator for the display line, thus making the display more readable.

2 * Set Breakpoint. This feature is not supported in the other Monitors. Up to three are supported. The effect is that when the breakpoint is encountered, execution of the machine language program being executed is stopped and the registers are displayed, as is also the address at which the halt was made. Probably this is the most important feature if IMON as such a

facility is invaluable in debugging. Although one can always use as many breakpoints as are available, the support of three in this program is generous. TBUG for instance, only supports one.

3 Write ASCII direct into memory. Characters from the keyboard are edited direct into memory.

4 Disassembler. A straightforward disassembler to Z-80 mnemonics.

5 Edit memory.

6 Filler. Changes any stipulated memory block to a given value.

7 * Go with registers to last breakpoint and continue. Used in conjunction with the breakpoint feature described above.

8 * Printer set up. This command enables the printer for output from the Monitor. An important feature is that both parallel and serial printers are supported. A serial printer must be connected through the Tandy 232C board and it is assumed that correct switch positions are set up on that board. Thus the Monitor interfaces a software serial driver routine with the hardware selected functions.

9 Input utility. Inputs from cassette. One of the features of IMON is that an automatic or direct start routine may be recorded on tapes made by the Monitor (see below). The input utility therefore asks whether or not the tape to be inputted was made by the monitor and, if so, whether the automatic start should be overridden.

10 Jump. Jumps to a specified address and executes.

11 * Load data from tape to a buffer. Another useful utility. Input from the tape is loaded to a specified buffer area in memory, rather than to its normal location. All data is loaded after the sync byte, including block identifiers and checksums.

12 HEX display of memory.

13 Output utility. Makes a tape of any required program in memory. The important feature is that an automatic execution trailer may be (optional) recorded onto the tape, the effect of which is that when the program is reloaded under the basic System command, it will execute automatically without the second asterisk appearing.

14 * Print speed. Valuable only with "non-Tandy" printers. A little clumsy in operation.

15 Printer set up disabled.

16 * Register display. Of great value is the ability to display the contents of the registers. The stack pointer is included.

17 Search routine. Search a specified block of memory for a specified byte or bytes.

18 * Port Control. Another new and useful feature. This routine continuously scans and displays, the contents of all the 256 ports at the same time, on either the screen or printer. Furthermore any byte may be sent to a port.

19 * Verify. This routine verifies a block of memory with a tape. The tape must have been created by IMON.

20 * Write tape from a specified buffer.

21 Mover. Moves a block of code from one location to another. It is important to note that this function does not relocate in the sense of changing any addresses of operands. It simply takes a block of code and puts it in a different location.

22 * Edit absolute branches. A final useful function not found in many other monitors. It carries out a disassembly but when it reaches an absolute branch, the program halts to give the user the opportunity to alter the branch address, whereafter the disassembly continues.

A very nice monitor with only a couple of small criticisms too trivial to mention. If you need a monitor then the choice between this one and the others will be easy. If you are interested in machine language almost exclusively, then buy this one. If you need to interact with Basic as well buy one of the others. Note that where an asterisk does not appear above, the functions may not be exactly the same. Monitors 3 and 4 for instance can punch a tape but not put an auto start trailer on it.

COMPANY DIRECTOR – RUN A COMPANY FOR A WHILE

In Company Director you play the part of a Managing Director of an electronics company, which has the capability of producing up to six different products – Colour TV, Refrigerator, Video Recorder, Digital Watch, Portable Radio and a Music Centre. Any number of players can take part, up to a maximum of four. An important feature that Company Director offers over similar programs is that each player is the Director of his own Company. Thus, each player has his own electronics company which produces the same products in competition with each other. The company starts with an authorised capital of £10 million, of which £5 million is issued at the start of the game and allocated to plant, machinery and cash. The remaining capital can be issued throughout the game or finance can be raised by way of an overdraft, which of course incurs interest payments. The game is split up into decision periods of one month during which each player has the opportunity to manage his company by means of a range of options involving labour, sales, machinery, plant, overheads. It is with these decisions that the skill of play is concerned. Make the correct decisions and the company will prosper, buy too much machinery with too little labour to operate it and you will have problems. Heavy expenditure on Research and Development will yield benefits in the long term but not immediately. All of these factors are inter-relative and a full explanation of their effects is beyond the scope of this writeup. They are, of course, explained in the instructions. In addition to normal home market sales, opportunities will come up during the game for players to bid on large export orders. If more than one player is playing, these bids will be competitive and are made in secret. Normally the lowest tender will be accepted but it will have to be below an undisclosed figure set by the buyer. A penalty is payable for non-delivery on time and the order will be cancelled, leaving the company with unsold stock. Obviously production and labour will have to be adjusted to meet the export order. At the end of each month, the computer calculates the results which are displayed in the form of a Profit and Loss Account and a Balance Sheet. A rather nice feature is that at the end of each month graphs are displayed for sales, net profit and a cumulative net profit. Cumulative accounts are also displayed at the end of each year. In summary, an interesting and captivating game, the appeal of which is enhanced by the graph feature (which in all fairness is probably not very informative but certainly adds punch to the game) and the competitive ingredient, when more than one player plays. The latter, incidentally, gets very interesting when one player operates two companies and one can compare the effects of two different inputs. Some features are randomised so the results are not always what one would expect.

DSM – A RANDOM FILE DISK SORT/MERGE

One or two small bugs in early versions of this program, which is available for the Model II and the Model I, have been corrected. We do not think that we received any of the ones with the appropriate serial number, but any customer who received a Model II disk with a serial number less than 3,000 should send it back to us for a free upgrade. All Model I disks were upgraded before shipment. Incidentally, although the description of what this program does, as shown in previous pages, is probably a little complex, the actual use of it is extremely simple and is made even easier by the use of CMF files as described under the literature on COMPROC. It is, therefore, one of those very good programs which carry out complex work in an easy manner.

PLEASE NOTE

All tapes supplied by Molimerx have at least two copies of the program on them. Whether the duplicate follows on the original, or is on the reverse, depends upon the length of the program. When it is on the reverse, a "duplicate" notice will be affixed. Thus, if it is not, then the duplicate copy follows immediately on the prime copy.
We cannot emphasise too strongly how important it is to make backup copies of tapes or disks. Apart from the security aspect, tapes made on your own machine will always load more easily. If you cannot make copies of system tapes, we recommend that you purchase one of the several tape duplicating programs that we stock, such as System Savers, Copsys and Cop16K.

BASIC REFERENCE – PLUS A BIT MORE

One of the most useful utilities a basic programmer can have, in our opinion, is a cross reference program. Indeed, we think that this is one of the principal features of NEWDOS+ (page 12, item 6). This utility for the Model II extends the normal reference program and carries out the following functions:

Searches for and displays on the screen or lists to the line printer all line numbers which contain:

1. All variables.
2. Specifically named variables.
3. Specifically named integers.
4. Specific commands or statements such as "GOSUB".
5. Specific strings up to 12 characters in length.

To further clarify, with this utility it is possible to search an entire Basic Program for the occurence of the above listed items and to display on the screen, or list on the line printer, the line numbers in which they occur. As can be seen, it is therefore an extremely easy exercise to find where variables are used, find what variables are used, trace back GOSUBS and GOTOS, and find the occurence of pretty well any string. The usefulness of this utility cannot be over emphasised.

DISK DIRECTORY – ORGANISING YOUR LIBRARY

Elsewhere in this catalogue you will find listed a program called Super Directory which performs similar functions to those in this program. It is somewhat more expensive, but has the tremendous advantage of being able to access pretty well any disk operating system. The present disk directory is only fully applicable to TRSDOS and NEWDOS. On the other hand, it costs quite a bit less. Consequently, if you are only interested in TRSDOS or NEWDOS then you may wish to save the money by buying this program. The running of this directory is entirely automatic. It is only necessary to put a target disk into the drive and Disk Directory will extract all of the information from it that it needs. The program also contains a sort feature, whereby the contents of the catalogue can be sorted into alphabetical order. The directory may, of course, be updated at any time. The maximum number of disks allowed on the directory is 256. The 32K system will hold 752 records, and the 48K will hold 1,317 records. Disk Directory of course supports a line printer.

SEPTEMBER LISTING

PROZAP – THE 3rd GENERATION ZAP

This program, written by Nigel Dibben, is well up to his normal excellent standard. It is the best program of its kind that we have seen. A zap is a program which enables disk users to get into their disk and carry out various investigations and modifications to the actual disk itself. In other words, the user is operating on the medium rather than in memory.

PROZAP is a machine language program which loads automatically from the DOS state by simply entering in the program name. It has a large library of commands listed below, but probably its uniqueness centres upon its ability to access disks from which users have hitherto been locked out and its ability to copy a whole track into memory for investigation. Quite a fair number of disk programs come out nowadays, particularly from the United States, with various protection devices built in. The common gimmick, for instance, is to use non standard sector numbering. Such a device is not a bar to accessing the disk if you are using PROZAP. Display of disk contents is in hexadecimal and ASCII and a particularly appealing feature of PROZAP is a linked cursor so that if one positions the cursor over a hex number, the other cursor is automatically over the ASCII equivalent. The program is, of course, supplied on disk and may be used with single drive 32K minimum machines. There are two levels of command, the Command Level and Display Level. The library of functions available is as follows:-

Command Level

1. Display any sector
2. Automactically load the Directory track
3. Enter a DOS command, execute and return.
4. Recall the Buffer.
5. Display the disk statistics of a file.
6. Go direct and display a file by sector.
7. Copy a disk.
8. Go to Debug and return to PROZAP.
9. Disable the disk system usage.
10. Encipher a Password.
11. Read any track into memory so that the contents of it may be examined, including the sector layout and other data.

Display Level

1. Hexadecimal or ASCII modify mode.
2. Page to previous or next sector.
3. Jump to a specified byte
4. Display same track and sector, different drive.
5. Output a sector.
6. Zero all or part of a sector.
7. As above but with any non zero byte.
8. Search for a byte or search for a word.
9. Display Hash Code and its correct position.
10. Go direct into a file display mode.
11. Print a sector on the line printer.
12. Page to a new track or sector.
13. Save a sector to memory.
14. Load buffer from memory.
15. Match the current sector with another.

New Improvements

A number of improvements have been made to Prozap over the year and a half that it has been in existence. Rather than add them to the above original catalogue insertion we are listing them separately.

Addition No. 1

1) Prozap is now compatible with LDOS and, for that matter, VTOS.
2) The error Reporting procedures have been changed. Immediately an error is encountered, a code number is reported on the display screen to give an unmistakeable error notice. When the user reverts to the Command mode, a full message is displayed of the current error.
3) Track identity of check mode is now available. Some disks are protected from inspection by irregular track numbering. This track ID mode overcomes this difficulty.
4) Track/Sector usage may now be displayed.
5) Limits on sector numbering may be selected.
6) IBM or non IBM formats may be selected.
7) Paging by track in addition to sector is now available.

As stated above, a number of additional improvements have been made. Probably the best is that at the Display Level a sort of synopsis of current statistics is displayed at all times.

Addition No. 2.

Prozap version 2 has now been upgraded so that it is compatible with the Model III Tandy machine, together, also, with the Model I when used with a double density on either machine. This has necessitated a number of command changes, for instance, as Prozap automatically checks whether it is reading a single or double density disk, the command I has disappeared as track numbers are checked on every read. Far more program variables may now be set by the user. For instance, the configuration of the disk is stored in a six byte table containing data on the density, granules per track, sectors per granule, low sector number, high sector number and sectors per track. All of these can be changed. An interesting feature is that if the track ID is not found within 5 passes, the density will be switched once and if it is still not found then the previous density will be restored and an error displayed. Repeated tries may be made if necessary. Two new commands are added so that the automatic disk density can be overridden manually.

Addition No. 3

Probably one of the most useful features that can be included in a zap program is now available in Prozap. Namely the ability to readily determine the loading address to each byte of the file. This can be done in either direction. In other words, if you know the memory address of the byte at which it will load, then simply entering this with the appropriate command in Prozap will cause the program to position the cursor over the appropriate byte, even though you are examining the contents of the disk and not memory. This is of particular importance when you are patching a program for it saves you carrying out a patch in memory and then reloading the program to disk, as this can be a long and error-prone exercise.
The reverse of the above can also be carried out. Thus if you position the cursor over a byte in the disk display, then the appropriate command will tell you the address at which that byte will load into memory when the file is loaded.
Further additions were made to Prozap. A number of them were cosmetic. The support for single and double density was tidied up and almost complete support for Dosplus was added. Without a doubt, Prozap is now the number one zapping program, not only in this country, but throughout the world.

DISKAID – ANOTHER THIRD GENERATION ZAP

This disk investigation and modification program is similar to Prozap shown elsewhere in this list. The two utilities, both of excellent quality, do have some different features and hence it was considered worthwhile to offer both of them, rather than choose to publish just one. Probably the best way to describe Diskaid is to list the commands, which are as follows:

0		Display sectors.	1	–	Print sectors.
2	–	Display memory.	3	–	Print memory.
4	–	Display file.	5	–	Print file.
6	–	Search file.	7	–	Locate file.
8	–	Directory repair.	9	–	Encode/decode password.
A	–	Copy sectors.	B	–	Backup.
C	–	Copy bytes.	D	–	Clear sectors.
E	–	Verify sectors.	F	–	Escape to program/DOS.

Although both programs can display memory, they do so in different ways. Prozap does it through the debug utility, whereas Diskaid does it direct from the program itself. The latter displays 256 bytes at a time from any section of ROM or RAM starting at any address, ending in OOH. The directory repair feature in Diskaid is probably a little easier to use than Prozap, although with both programs the end result will be the same. With Diskaid the function restores read protected status to any sector of the directory track that has lost it. It will also examine every live entry in the directory and report on certain errors and finally, if no errors are found in the GAT or HIT sectors, these are re-written back to the disk automatically. The backup facility in Diskaid is similar to the one in Prozap, but does have the advantage that it may be used on a single drive. The Verify command in Diskaid is almost the same as the Match command in Prozap. Diskaid will encode and decode a password, whereas Prozap will only encode. The above are the principal differences in common commands. It is fair to say that Prozap contains more commands and features than Diskaid. On the other hand, Diskaid costs a little less than Prozap.

TOUCH TYPING COURSE – A SUPERIOR TYPING COURSE

There are a number of touch typing programs on the market, the purpose of which, to a lesser or greater extent, is to teach a person how to touch type on a typewriter by using the computer keyboard. So far as we know, up until now, they have all consisted of single tapes and although some of them are very good, particularly Microsoft's Typing Tutor, none of them really profess to be a complete course on the subject. To some extent they may be described as practising sessions guided by a program. This course, however, is complete and consists of no less than eight separate and different lessons. These, incidentally, may be purchased either as a complete suite, or separately as the student progresses. The suite offers a methodical learning process which gives the necessary instruction in a progressive and efficient manner. Learning is automatic, not requiring any self-discipline on the part of the user once the initial decision has been made to load the program. All user errors are monitored and the program reacts to such mistakes. It is suitable for any age of

A WORD ON OUR CATALOGUE

Customers frequently ask us about the quantity of space that is allocated to each program and we would like to make it clear that the number of lines of description of any particular program in the catalogue in no way reflects the quality or complexity of the program. It is simply that some programs require a lot of explanation and some very few. A Wages program, for instance, is extremely complex, but there really is not too much you can say about it except that it calculates your PAYE and National Insurance. A good game on the other hand, not perhaps of the seriousness of business programs, may well still need a great deal of explanation. Experienced readers of these sheets may be able to gather from our description whether we are particularly taken with a program, but as the judge says when he sums up, this should in no way affect your decision! The important point is that we always try to give a fair representation of the program and what we think of it.

NEW AUTHORS PLEASE NOTE

As this June list goes to press, we are concluding negotiations in the United States for the distribution there of some of our English authors' programs. We are also in the process of negotiations for distribution in Australia. These new activities will make more profits for our authors and, before anyone asks, no it does not make a great deal for us but it will, we hope, attract more and better software from authors.

student. It would, for instance, be possible for a seven year old to learn to type from it whilst, on the other hand, a school leaver should be able to pass a typing exam and get a job on the basis of the first six programs. Probably the most important point is that a rhythm, which is so important to typing, is maintained throughout the lessons. It is only by attaining this rhythm that a user is able to increase speed past about 25 words per minute. The system of teaching used in the lessons is a variation of the well tried and tested horizontal method, adapted to make use of the unique characters of computer assisted learning techniques. Typing speeds are varied during the first four lessons in accordance with the difficulty of the material presented and the user is told his final speed when he reaches the end of the lesson. The fastest of the optional speeds in lesson 5 brings the user to about 30 words per minute and in lesson 6, this is 35 words per minute. In the last two lessons, the student chooses his own speed, which is analysed line by line in the program. The last two lessons, nos. 7 and 8, are practice sessions, In lesson 7, the practice is in copy typing from amended copy and in no. 8, in high speed typing. Hence, these two lessons are to some extent optional. The contents of the lessons are as follows:

1. Second row (home keys). Each practice text maintains rhythm while building up accuracy at a set speed.
2. Third row. Exercises as above, using sentences from the second and third rows.
3. First row. Exercises as above, with sentences from the first three rows, and introducing the use of the SHIFT key for symbols and initial capital letters.
4. Top row. Exercises as above for the top row numbers, followed by exercises for the symbols with optional practice length. The BREAK key is disabled to avoid accidental BREAKing and there is more practice with the shift key and with various kinds of text material.
5. The basis of the error-count is now word-by-word, as used in speed tests, and the user is provided with a series of types of texts chosen from menus. There is a simulated Shift Lock and also an automatic spacing mechanism. For each text, one of three possible speeds can be chosen. Rhythm is still maintained, the user now being given a period of time to type each word which is proportional to its length, thus reducing the strictness of the previous letter-by-letter rhythm drill. At any time the user can obtain an evaluation of his error rate at the chosen speed.
6. As in no. 5, a menu is provided, and the three possible speeds are now faster, the fastest being 35 w.p.m. Use of the ENTER key when typing computer program lines is introduced and practice in the use of a Tabulation device is now available, allowing the user to copy tabulated material provided in the documentation.
7. This lesson offers practice in copy typing from three texts provided in the documentation: poor handwriting, neat handwriting with amendments, and typescript with written amendments. The amendments are made using standard symbols for correction of printers' proofs, and a separate list of these symbols is provided. The correct version of the texts is contained in the program and the user can call up the correct version of a line to compare it with the version he has typed. He can now type as fast as he likes and the time taken on each line as well as his words per minute rate overall will be given.
8. The user can build up his speed by typing a long text as fast as he likes; it is stored within the program and can be called up line by line for comparison with the original. The words per minute rate on each individual line is given.

Each lesson uses between 10 and 15K of memory and so the entire course may be used by 16K owners. Available on disk as a complete course. Customers should be aware that although the Model III lower case is being worked on, at the moment Touch Typing course is only compatible with Model I.

DARK VOID – RAYS, ATOMS AND MOLECULES

This is a board type of game, the purpose of which is to locate in the dark void a number of atoms by shooting rays into it. The board is made up of 64 squares into which atoms are placed by the computer. These, of course, cannot be seen by the player, although a number of them can be chosen by him up to a maximum of seven. Depending on certain set rules, the ray which is shot into the Dark Void will behave in one of three ways. It will either be absorbed, which indicates a direct hit on the atom, or it may be reflected back out of the Void in the same position as which it entered. Finally, the ray may be deflected by the atom, in which case it will emerge from the Void, but not in the same place at which it entered. By means of the data gathered from the behaviour of the rays, the position of the atom can be deduced. Rays incidentally, may be deflected by more than one atom at a time which makes life rather difficult. Although the board is graphically represented, and other display graphics are used, throughout the game, Dark Void is, essentially, a game of logic and deduction and as such it is a very good one. Apart from the clues given as to the behaviour of the rays, the only other aid that the player really has is the ability to mark (and erase) various squares on the board. This is purely visual aid to help the player keep track of what he is doing. It does not affect the game as such. This game also features sound and a choice of skill level. A time factor is also included, the length of which is set by the skill level.

FARMER BROWN – STRICTLY FOR THE CHILDREN

This program does not in any way pretend to be a program for adults, although the graphics are so good that many adult programmers will wish to investigate the writing of the program. It has evolved from a very old children's game, whereby Farmer Brown has a farmyard through which many peculiar animals and objects pass. Pictures of these animals walking across the screen are displayed and the child must enter the first letter of the name of the animal in order to gain a point. Points are deducted for incorrect or zero responses and the maximum score is 300 in 30 tries. There are 26 animals or "things". The graphics are excellent and will probably appeal to an age group from about five to ten years, although the author tells us that he wrote it for his two sons, one of which is only aged three! Sound is included in the program.

TABLES – LEARN MULTIPLICATION WITH FUN

This is a unique program, the purpose of which is to get youngsters, of say around eight years of age, to learn their multiplication tables (a) without knowing they are doing it and (b) having fun at the same time. Actually it is rather hard to describe the program because it really boils down to the child having a chat with the computer. When first starting, the program asks the child whether he or she wants to do some multiplication, or have a chat. No doubt the normal child response would be to have a chat and this leads into a whole forest of cross jokes and comments, most of which inevitably lead back to the child doing some multiplication. The program has been extensively tested with a number of children and apparently the writing of it became evolutionary. However that may be, the result is a program which is sure to interest the children and educate them at the same time.

HANNIBAL – NOT FOR THE FAINTHEARTED

Before we attempt to describe this program, we should mention that it is a serious war games program from Dr. Bodley-Scott, who was a co-author of Emperor. It is a long game and a complicated one. For this reason, incidentally, provision is made for saving on cassette a partly played game. Basically, Hannibal is an authentic, historical simulation of the Second Punic War, the epic struggle between Rome and Carthage for supremacy of the Ancient World. It is a game of considerable strategic skill for two players. The game starts in 220 BC and each year has three campaigning moves, Spring, Summer and Autumn. Taxes are collected and troops paid during the Winter break. In each move, both players take their turn, whereafter the result of any conflicts are determined. As it is an advantage to have the second turn of the move - since you will have had the opportunity to see your opponent's moves before deciding on your own - each player has the first and second move alternately. There are four maps, which although they are to different scales, are continuous with one another. The maps are of Italy, Spain, Africa and Sicily. It is not intended in this brief summary to go through all of the various troop movements, treasury reports, recruitment and wars which are included in this game. Suffice it to say, the game is very complete. It may, however, be of interest to prospective purchasers for us to give some of the historical background to the time in question. In 264 BC Carthage, a Phoenician colony with a North African and Sicilian empire of respectable antiquity, first came into conflict with the younger and rapidly expanding state of Rome. In the First Punic War, which lasted until 241 BC, the Carthaginians lost both their Sicilian possessions and naval supremacy in the Mediterranean. Sicily became a province of Rome, only the powerful Greek city-state of Syracuse remaining independent. By way of compensation, the Carthaginians began a systematic expansion of their possessions in

Spain. The great new city of Carthago Nova was founded there in 227 BC. In 219 BC Carthage's young general, Hannibal, laid seige to the city of Saguntum. This city had a treaty of protection with Rome, and so Rome declared war on Carthage. After capturing Saguntum, Hannibal made a surprise march across the Pyrenees and Alps into Italy. Here he defeated every army the Romans brought against him for sixteen years, but never managed to capture Rome itself. Meanwhile, a Roman army sent to Spain succeeded in defeating the Carthaginian forces there and conquering the entire province. In 204 BC a Roman army crossed to North Africa and defeated the Carthaginians at Tunis. Hannibal was recalled from Italy, but was defeated by the Roman general Scipio at the battle of Zama. Carthage was forced to accept humuliating peace terms, and Hannibal fled into exile when the Romans demanded his extradition. He commited suicide in 183 BC. In 149 BC the Romans engineered a further war with Carthage, in which Carthage was destroyed and its citizens sold into slavery. As will be seen from this background, there is plenty of scope for a very enjoyable game. It is supplied on cassette and will run in a 16K machine, but floppy tape users will require 32K.

INCOMPLETE RECORDS – PROVIDES TRIAL BALANCES AND TRADING ACCOUNTS

Two important points before we describe the program. Firstly, it is written by an accountant with programming experience, rather than the other way round and although it is written particularly with the accountant in mind, it may be used by any company for their own accounts. The second point is that although it is entitled an Incomplete Records program and, of course, performs that function, it is equally suitable for the production of accounts where the complete books of account are kept, when it then performs the function of a Nominal Ledger and produces Trial Balances and Trading Accounts. It is particularly aimed at, and will have the most application to, small to moderately sized businesses, such as shops, farmers, smaller production companies and so on. The purpose of the program is to computerize the production of the annual trading account, profit and loss account and balance sheet. As the data is always held in memory, the maximum number of entries is set at 1200, each one consisting of a code, amount and description. Such a capacity should be suitable for the type of companies mentioned. The number of analysed codes is 80, which may, of course, be allocated as required. The system is self-balancing in that it is not possible to exit from a batch of input without balancing it to zero. Totals under each analysed code are accumulated as the date is input and hence a balanced trial balance can be extricated at any point during the run. In its present form, the program is suitable for sole traders only, as only one Capital Account is included. The program can be used for partnerships, in which case Capital Acccount figures between the partners must be manually analysed. Specimens of the Trading and Profit and Loss Accounts and the Balance Sheet are shown below. The program is, of course, disk-based and requires a full system, that is to say 48K of memory, two disk drives and a line printer. A manual is supplied.

```
BALANCE SHEET AT 31 MARCH 1980
FIXED ASSETS              COST     DEPRECIATION      NET
FREEHOLD PREMISES       45,000.00   -15,000.00    30,000.00
FIXTURES & EQUIPMENT     3,215.00    -1,155.00     2,060.00
MOTOR VEHICLES           7,675.00    -1,545.00     6,130.00
                        ----------  ----------    ----------
                        55,890.00   -17,700.00    38,190.00
                        ----------  ----------

CURRENT ASSETS
STOCK                                  1,567.50
DEBTORS                                4,528.33
BANK                                   7,357.17
                                      ----------
                                       13,453.00
                                      ----------
CURRENT LIABILITIES
HIRE PURCHASE                          -2,341.22
CREDITORS                              -5,026.73
                                      ----------
                                       -7,367.95
                                      ----------
NET CURRENT ASSETS                                    6,085.05
                                                    ----------
                                                     44,275.05
                                                    ==========
                    REPRESENTING:
CAPITAL ACCOUNT
OPENING BALANCE                                     -38,940.00
NET PROFIT                                          -15,335.05
                                                    ----------
                                                    -54,275.05
DRAWINGS                                             10,000.00
                                                    ----------
                                                    -44,275.05
                                                    ==========
```

```
TRADING AND PROFIT AND LOSS ACCOUNT
YEAR ENDED 31 MARCH 1980
SALES                                          -106,412.89
PURCHASES                                        54,696.36
                                                ----------
TRADING PROFIT                                  -53,516.53
                                          49 %
LABOUR COST                          35,615.77
RENT                                    500.67
RATES                                   143.22
POWER                                   231.23
REPAIRS & MAINTENANCE                   110.00
TELEPHONE & POSTAGE                     180.76
MOTOR & TRAVEL                           60.00
EQUIPMENT RENTAL                         96.00
BANK CHARGES                            432.11
HIRE PURCHASE INTEREST                  341.22
ACCOUNTANCY FEES                        370.50
SUNDRY EXPENSES                         100.00
                                     ----------
                                                 38,181.48
                                                ----------
NET PROFIT                                      -15,335.05
                                                ==========
```

KNIGHTS TOUR – A CLASSIC CHESS PUZZLE

Knights Tour is a very well known chess puzzle whereby the player has to move a Knight, in its normal move configuration around a chess board so that it occupies throughout its tour all of the available squares and does not occupy one on more than one occasion. There have been a number of programs written for the TRS-80 that play this game, but none of them have really been of sufficient standard for us to stock. This one is English written and is of a very good standard. The graphics of the board are good and a trace command is available. The effect of this, of course, is to retrace the Knight's steps. All in all a nice, little program for the Winter evenings!

SUPERLIFE – THE ULTIMATE GAME OF LIFE?

The game of life is so well known that it hardly requires any description. We already stock what one might call the standard Life and also a graphics version. For the uninitiated Life is played by placing cells on a matrix or board in any required pattern. The game proceeds by ''generations'' and between one generation and the next, if a life cell has exactly two or three cells as neighbours, it survives to the next generation, otherwise it dies. If an empty square has life cells on three of its eight neighbouring squares, a new cell is born, otherwise nothing happens. The object, of course, is to find interesting patterns, patterns that repeat after a fixed number of generations, patterns that grow at a fast speed and so on. The usual limiting factor in the game of Life is the size of the Board. Some games get over this by wrapping around, but this often leads to errors. The great advantage of Superlife is the size of the board available. Superlife 1 has a matrix of 256 x 256 squares and is suitable for a 16K machine. Superlife 2 has a board of no less that 65536 x 65536 squares and is for 32k machines. In other respects the two versions are identical. Obviously these vast boards cannot be shown on the screen all at once and for this reason a ''window'', 64 squares wide by 15 high is provided. This can, of course, be moved so that you can look at any part of the board.

MACHINE CODE TO BASIC – AN EASY WAY TO M/C SUBROUTINES IN BASIC

It often occurs that a machine code subroutine is more easily kept in data lines in the Basic program so that the host program can simply poke it into memory. Using this approach, it is not necessary to load a Basic program and a System tape. This program enables the user to place machine code into data statements automatically. The machine code can be placed in high memory in any way including loading a System tape. This program is then run. It reads the machine code and places it into data statements in the Basic program. The command LSET is then typed and deletes the main part of the program and then renumbers the data lines starting at 1. A further command is typed, MERGE, which blocks off the data lines and enables the user to either CLOAD or enter from the keyboard any Basic program. When this has been done, the command RSET is entered, which automatically combines the program and data together. The resulting program, therefore, contains the data representing the machine code. This is particularly straightforward and easy program to use and saves a great deal of time and energy over the more normal approach of converting machine code to decimal and entering it in as data lines. The program, at this time, is only suitable for 16K Level 2 machines.

QRA LOCATOR – A DISTANCE CALCULATOR

The QRA Locator system is used extensively by radio amateurs in England and the function of this program is to calculate the distances between any two points in Western Europe using the coding promulgated by the Radio Society of Great Britain. This coding is based upon a grid overlay of Western Europe. We are not able to publish the map that shows this grid because it is copyrighted by the Society. They tell us, however, that copies are obtainable from them for a few pence. As amateurs will know, the system is used most commonly on the VHF bands and this distance calculator is accurate within reasonable limits up to 600 nautical miles. The distance may be calculated in either statute or nautical miles or in kilometers. The program requires the input of the home station's QRA code and then code for each other station that has been contacted. The output is either to the VDU or to a line printer. An added feature to the program is a system for calculating points scored according to the usual system(s) used in Great Britain. The separating rings are set to 50 kilometers, but this can be changed by altering a line in the program.

DOSFIX – FOR FREE, BELIEVE IT OR NOT

Throughout the catalogue will be found a number of programs written by Snapp Inc. In addition to these utilities they have written two patch programs, one for the Model II and one for the Model III. In both cases these patches modify TRSDOS. Most of the changes, which, incidentally, are permanent, relate to errors in the DOS. Some, however, add new facilities. For instance, one on the Model II is to move the Break key from its present position, where it can easily be hit by inexperienced operators, to control 6. Probably most importantly, these patches are supplied free on disks which contain Snapp programs.

TRACKER – A TRACE PROGRAM FOR MACHINE LANGUAGE PROGRAMMERS

Tracker is a dynamic simulator trace which finds its most common application in the debugging of machine language programs. It carries out the following functions.

1. Load programs successively from disk and trace them.
2. Simulate the runs of a machine code program seeing, at each step, the effect on the registers.
3. Send trace output to the printer.
4. Trace the main structure of the program only by confining the output to jump type instructions.
5. Single step through programs.
6. Run programs untraced, subject to return at a breakpoint.
7. Examine and alter memory.

The program operates in three modes. Command mode, trace mode and display mode. The features available in Command mode are as follows:-

1. Load the program from disk.
2. Set the contents of registers.
3. Pop the stack.
4. Push the stack. Tracker, incidentally, maintains a separate internal stack for the object program.
5. Change to Display mode.
6. Set breakpoints. These may be anywhere in memory, even in ROM.
7. Set breakpoints and the program counter, then run program untraced until a breakpoint is encountered.
8. Enter trace mode and run.
9. Enter trace mode, single step and pause.

The following functions are available in both Command and Trade Modes. The first four operate as toggles, i.e. they turn the facility on or off, depending upon its present position.

1. Turn the printer on or off.
2. Pause automatically after every fifteen lines or run continuously.
3. Run the trace at fast speed. When this function is off, the trace runs at about two lines per second, otherwise as fast as the display can scroll.
4. Limit the display or printout the jump type instructions.
5. Display a line showing the state of the program counter registers, the instruction it points to and the contents of the other registers before the instruction is obeyed.
6. Display the contents of alternate registers.

The following commands are available in Trace mode:-

1. Pause.
2. Resume tracing.
3. Single step and pause.
4. Go to Command mode.

In the display mode, a display is shown of 256 bytes of memory starting at a chosen address. Hexadecimal and ASCII are displayed. Lower case is converted to upper case. Graphics and control characters are replaced by full stops. The commands available are as follows:-

1. Advance one page.
2. Retreat one page.

3. Move to a specified new page.
4. Return to Command mode.
5. Change memory starting at a specified byte.
6. Replace a current byte.
7. Move to next byte without change.
8. Move to next line.
9. End changes.

This program constitutes an extremely useful and advanced tool for the machine language programmer as can be seen from the commands above. It was written, as was Diskaid and Superlife shown elsewhere in this list, by Mr. K.P. Leary.

Note to 1982 Catalogue Re-write

Tracker was subject to a major upgrade in late 1981 and is now entitled "Tracker V.2". Six new commands are added, particularly the ability to load non-command programs and files without extensions in their file specifications. Current register contents can now be saved, including Stack Pointer and Program Counter. A new command will restore the registers to their state before the last register saved command. Additional convenience features include the back arrow to retreat to a previous byte without changing anything, and the up arrow to move back one line without changing anything. The break point command is improved chiefly with regard to ease of use.

80 TRACK

There has been some misunderstanding regarding the number of tracks per inch, particularly with 77/80 track disks. The standard is in effect set by Cumana Ltd. who import the Teac Drive which is fast becoming the standard for both Tandy and Genie machines. Originally these drives were 100 tracks per inch, but some of the American drives were 96. The two are not, of course, compatible. Cumana have now advised us that they are adopting the following standard, namely that drives for the Model I are 100 tracks per inch, drives for the Model III are 96 tracks per inch.

GOLF — A GOOD GRAPHIC SIMULATION OF THE GAME

This is a disk orientated program written in Basic with a machine language subroutine. It follows the real game quite closely. As supplied it has seventeen holes, but provision is made in a separate program for the user to construct different, or additional, holes as required. Each hole is played on a map of the course on which is shown various symbols indicating the features of the hole being played. Up to four players may take part at the same time. Strokes are made by indicating the club and angle of stroke required. Eleven clubs are provided, divided into two woods, six irons and three wedges. Each club will produce stipulated length of stroke. Course, terrain and weather information is continually available. The weather is of some importance. If, for instance, this is stated as humid, then the ball will not travel as far as when the course is dry. It is assumed that players have a reasonable skill because, generally speaking, the ball will always play towards the hole. Its course will, however, be altered by the wind and by a small, random amount. Angles will, of course have to be used in order to avoid hazards, but when on the green and putting, angle entry will usually be zero. Angles of plus and minus 90° are permitted. The former will play the ball directly down the screen, whilst the latter will play the ball directly up the screen. The map of the course shows distances in increments of fifty yards. When choosing his club, the player should bear in mind that wedges should not be used against a moderate or strong wind, not in the rough or bunker. Irons can be played for most shots. Wedges are usually used in bunkers and will require the player to set a power value. Bunker shots are subject to a 25% loss of distance. If the ball is struck so that it lands off the course, it will be moved automatically to the middle of the course in a playable position and if it lands in a haphazard position, it will also be moved towards the tee to a playable position. Both of these events carry a one stroke penalty. Some holes are so long that two displays of the map are required. This does not, of course, affect play in any way.Each hole is selected randomly by the computer, but only one hole in the collection can be played once in a game. An enjoyable and skilful game, which balances rather nicely the inevitable restrictions of a computer game and the enjoyment of an actual round of golf.

NUCLEAR WAR — NOT THE REAL THING!

This is a conversational program of strategy, based upon the possibility of nuclear war. It is not a graphics program. It may be played by one to twelve players. The computer takes the place of as many players as is required. Each player has the control of one major country and has to successfully destroy all enemy populations in order to win the game. The country has control of offensive and defensive missiles, together with factories within which to manufacture them. There is also a set of minor countries, which like the majors, number twelve. A minimum of three must be engaged in the game. Major countries are called upon to donate money to minor countries and if they gain control of the minor, they will have the benefit of the missiles produced in that country. On each turn, players have various options, including building missiles and anti-missiles together with new factories. Additionally, cash can be raised by selling factories to minor countries. Once the preliminaries are dealt with, new ratings for computer controlled major countries are calculated, so that missile targets and defences may be decided. Thereafter, each player, including the computer, is asked whether or not they wish to declare war. If they do not, they cannot, of course, fire any offensive missiles. Population growth and cash revenue are larger in peacetime. Declaring war early allows a surprise attack, but for reasons of humanity (!) computer controlled majors are biased against the first warmongers! Missiles are fired by typing the target country and quantity. The major must also specify whether he wishes to aim at population or factory targets. After anti-missiles are allocated and when all attacks have been decided upon, the effects are calculated. Each missile that gets through will destroy one million of the population or one-third of a factory, depending on the target. When a major country loses all of its population, it is eliminated from the game. If all countries, except one, are eliminated, then that one is the winner.It is (as indeed it would be in a real war) possible for all countries to be eliminated in the same turn, which rather emphasizes the fact that in a real nuclear war, everyone will lose. At the end of each turn, a minor might become neutral, in which case money donated to that minor is lost. Minor countries may never be attacked. In summary, this is a fairly simple game of strategy, the subject matter of which is rather depressing but, we suppose, nonetheless interesting for that. It needs full 16K, but we have asked the author to try and reduce the size for floppy tape users.

A FEW ODDS AND ENDS TO NOTE

Sometimes in the computer business the most simplest of accessories are difficult to obtain. We were continually trying to find spare cardboard sleeves for our 5" diskettes. At one time we were convinced there was a "sleeve-eater" around in the office! For our own use, therefore, we have started to have the sleeves manufactured and printed and in case other users have had the same experience, we can offer these for sale at ten for £1.00 plus VAT and P & P.

Mr. Frederick Brown of Hull wishes us to mention that he has started Forum-80 in the U.K. This is a free bulletin board service run for the computer hobbyist. It may be used for leaving messages, hints for other users, requests for help and so on. Items for sale or wanted may also be listed. Connection to the bulletin board is over the telephone via RS232C interface and a phone modem. Smart Terminal, or another similar program, will also be required. Forum will be available on Thursday evenings between 7p.m. and 10p.m., Saturday from 12.00 noon to 10.00p.m. and the same hours on Sunday. Mr. Brown tells us that other times can be fixed by arrangement with him. The telephone number is Hull, for which the STD code is 0482, 859169.

The registered business name of A.J. Harding (Molimerx) was originally chosen for this Company in preference to forming a limited company, so that customers would have confidence, not only in our integrity, but also to emphasize the personal service which

we intended and have carried out. For accountancy reasons, however, it has become necessary to form a limited company and this has been done in the name of Molimerx Limited. I would like to emphasize that although advertisements and other literature will contain the new Company's name, they will also contain the name of the original firm so as to emphasize our particular policy of business. Indeed, the two entities will be continuing on a "hand in hand" basis. Whilst on the subject, a number of customers have asked us how the name "Molimerx" came about. The Latin word for soft is "mollis" and the Latin name for ware is "merx" — hence, Molimerx! Molimerx is represented in Australia and New Zealand by Molymerx PTY Limited. Molymerx is, of course, licenced by the United Kingdom Molimerx and they carry all our material. There is, however, no other connection between the two companies. Molimerx is represented in Canada by J & J Electronics Limited. A number of our products are sold in the U.S.A. by Computer Shack, Powersoft and Acorn Software.

CHRISTMAS LISTING

FOX & HOUNDS — A NICE STOCKING FILLER!

This is a nice little program that has been adapted to the TRS-80 (with permission) from an article which originally appeared in "Computing Today". It is played on a chessboard between a fox and two, three or four hounds. The player controls the hounds, and the fox is controlled by the computer. The purpose of the game is for the hounds to either corner the fox or trap him against the side of the board. If they do then the player wins, if the fox gets through to the bottom line then he wins. Feeling as we do about fox-hunting we rather hope that the fox makes it every time. Unfortunately, with three or four hounds, the odds are very much against him, but when only two hounds are chosen, the odds are a bit more even. The graphics are good and a nice little touch is that the dogs can face either way! All in all a compact, fun game.

CUBE HUNT — A PICTORIAL WORLDWIDE SEARCH

In the world there are hidden eight separate segments of a cube. Your mission is to find and collect them. The game is played against an excellent graphic representation of a map of the world divided into two. The first shows the continents from the British Isles to China and the other overlaps the first showing the British Isles again and the west side of Africa and Spain and stretches westerly to Alaska. The map scrolls automatically as you travel the globe. One of the very real additions of this game over the one or two similar ones that we have seen is that it will change every time you play it. Each continent has three separate cube positions and three ports of entrance and one of these is chosen randomly each time the game is run. The cursor arrows are used to guide yourself about the world (a Genie modification will be ready very shortly) and to find each cube segment you must attempt to dock at a specific port on a specific continent. In the first instances no clues are given, but as your failures mount up you may be thrown a crumb of a clue. Actual attempts to dock at various points on a continent must be made. It is no good just cruising by! Damage can occur to your craft for various reasons varying from storms to shark attacks and if this damage exceeds 50, you sink. The left hand ten columns of the screen are reserved to continuously show you your X and Y co-ordinates at any given time together with the damage estimate and the number of cubes you have collected. It is in this area also that it is reported to the player the position of the game, details of attack and any clues. Having docked at a continent the display shifts to a map of the land mass and somewhere the cube segment is lurking. You must find it and then return to the sea to continue your search. So far as we have been able to ascertain, at the time of going to press, Cube Hunt is compatible with Disk Basic.

ANIMATION — A MAJOR NEW PROGRAM

Animate is a machine language program representing an entirely new breakthrough in the use of graphics on the TRS-80 or Video Genie microcomputers. As Walt Disney and others found to their profit some years ago, if you draw a number of separate pictures slightly different to each other, and then display them consecutively sufficiently fast, a moving picture is produced. This is precisely what Animate does. Pictures are built up as a sequence of frames, each one being as small or as large as you wish and composed using an easily used graphics cursor. The entire graphics content of a frame can be shifted in any direction so as to move objects without the need to redraw them in each new position. As each new frame is completed it is automatically stored in memory and given a number, so that it may be recalled and edited at will. The timing of the projection of each frame is definable up to a maximum of 100 seconds.When the picture is completed, it may be viewed and edited as you wish. When the final picture is complete it may be stored on cassette as a SYSTEM program. Thereafter, it may be loaded and accessed either by Animate or by any Basic program. Thus the same picture may be used in any number of different Basic programs, if you wish. Animate has a large repertoire of commands. In the list which follows, the word "sequence" is used to mean the collection of frames or pictures which have been composed. The commands are as follows:-

1. Dump the entire sequence to tape for future use either with Animate or as a sub-routine for a Basic program.
2. Load sequence from tape which has been dumped under the command above.
3. Frame set. Set the size of the frame required.
4. View the entire "movie", that is to say, run the entire sequence on the screen.
5. Clear the screen or the current frame.
6. Single step backwards or forwards through sequence.
7. Quit the program and go to Basic.
8. Clear the sequence and re-start with a new one.
9. Enter graphics mode whereupon a new series of commands is available to enable the user to easily draw the pictures.
10. Kill the current frame.
11. Jump to another frame in the sequence.
12. Set the time period that the frame is to appear on the screen (up to 100 seconds).

In addition to the matters mentioned above, any frame may be set to reverse graphics, that is to say black on white instead of white on black. Throughout the time that one is working on a sequence, all vital statistics are available for display on the screen. These consist of the number of frames that have been stored, the current frame number, the current frame size and the memory size currently set for Basic. When the "movie" has been completed and saved to tape, it may very easily be used within a Basic program. All that is necessary is to insert the command X = USR(O) at the desired point in the Basic program. Note that it is not necessary to set memory size for the tape, nor is it necessary to enter the sub-routine start address. This is all done automatically by the tape when it is fed in. An added bonus with Animate is that two other items of software are suppled with it. The first is a pre-written sequence showing a Lunar Lander coming down to the Moon's surface and the second is a Basic program in which this sequence is used. Effectively, therefore, the customer is getting a free Lunar Lander program thrown in! More importantly, the Basic program shows very clearly how the sequence is called from Basic and how easily this is done. Although a Lunar Lander example is perhaps not the "cutest" of subjects for an animation sequence, it does show how Animate can be used to mprove graphics which are quite common place for the TRS-80. In particular, note the way that the exhaust shape and type changes, depending on the amount of thrust used. This is probably one of the most important pieces of software that we have had the pleasure to introduce for the TRS-80 and Genie microcomputers. A separate version incidentally is available for the Genie and customers should state in their order that they require the program for that machine, as otherwise the TRS-80 version will be shipped. There have been a lot of graphic programs for the TRS-80, but none we think of this quality. As stated in the first line of this write-up, Animate constitutes a completely new breakthrough. Cassette for Level II or Genie machines with 16K or more memory or disk for 32K. A comprehensive manual is supplied.

Note to Catalogue Re-write

A substantial update was carried out to Animation which contained various small improvements, but the main one is that the user has the option to display the movie sequence anywhere on the screen. Hitherto the sequence was displayed exactly as it was stored. This option is still available and the new facility of being able to display anywhere on the screen, regardless of where the sequence was "compiled", is additional. Wrap around is not permitted so it is now possible to display parts of pictures. An extremely valuable by-product of this new function is that it is now possible to compile a single frame and move the contents of that frame anywhere over the screen as many times as you like from within the Basic program. In other words, quasi-movements can be obtained with only one frame compiled. Compatibility with earlier versions is maintained for the disk version, but not with the tape. In other words, tapes produced from the previous tape version will not run on the new one.

STARFIRE – A SPACE SHOOTING GAME

If you like shooting games then this one will appeal to you. It is written in machine language for fast action and can be played either against the computer or by one player against the other. There is little that can be said about the game. The players fight it out across the far reaches of space, not only against each other, but also against the clock. The one with the highest number of kills, wins. The action is fast and furious and the graphics are very good, in particular the manner in which the closing scores are displayed.

YI-CHING – ANSWERS TO DAILY LIFE

Let us get one thing clear and out of the way first of all. Whether any individual person believes in matters such as these or not is entirely up to him, but the program has been written in a serious vein by a Priest of ISIS, who most certainly does believe. The point that we are trying to make is that this is a serious treatise and is part of a series of programs being written as part of the work of the Centre of Matt. Yi-Ching is in functions somewhat similar to Tarot card reading. It is extremely ancient and according to the author easily predates Confucius. The function of Yi-Ching is that the seeker of knowledge may ask any question that he or she desires. In the Chinese traditional method, bamboo sticks were used in order to obtain a hexagram and this is still considered to be the "proper" way to do it. An additional method is to use coins, each one representing a two or a three. Three coins are cast and the sides which are uppermost are totalled. Although the bamboo sticks are traditional, there is no reason why the hexagram should not be cast in different ways and particularly in this case by a computer. There are only four combinations of totals possible, numbering from six to nine. The number six represents a moving YIN line, seven represents a non-moving YANG line, eight represents a non-moving YIN line, whilst the number nine represents a moving YANG line. The YIN is a broken line whilst the YANG is the unbroken line. If a line is moving, it means that it changes after the hexagram is formed into the opposite line and, therefore, forms a second supplementary hexagram. The program takes you through the Yi-Ching in an easily understood manner and it needs no experience or knowledge in order to follow it. The question is written in as a precise manner as is possible using less than 32 letters. When the question is asked of the computer, the user should concentrate when asked to and repeat the question over to himself. The answers are traditional and use such phrases as "to cross the great stream" which would indicate a forward action no matter what hazards are met. The meanings of the answers have been deliberately chosen to be traditional and are entirely interpretive. The author is currently working on another program for the Runes and also on an astrology textbook on cassette. We would be interested to hear from any customers who would like to let us know whether or not there is a general interest in this subject. For obvious reasons, we are unable to accept any responsibility for the results of using this program, nor are we able to accept any liability for whether or not it gives satisfaction.

PASCAL – A COMPLETE PASCAL PACKAGE

This system is intended to provide the Model I and Model III TRS-80 user, together with the appropriate Genie machine owners, with a Pascal program development and execution facilities for all types of software. The system comprises the following components: Editor, Compiler and Run Time System. So far as is known, the Run Time System is compatible with TRSDOS, LDOS, NEWDOS 80 version II and DOSPLUS. It is also, of course, compatible with NEWDOS +. Although a 32K system is adequate to run many programs compiled with the Bourne Compiler (this Pascal package is written by Mr. T. J. Bourne of England), a 48K machine is most strongly recommended and indeed is essential if the user is going to edit, compile and run. Thus, it is best to say that the system is compatible with a 48K machine. Those new to Pascal are advised to use one of the many excellent introductory texts which are available. In particular, we recommend Mastering Pascal Programming by Eric Huggins, who incidentally is also the author of our Enigma program. The well known book – Jensen and Wirth Pascal User Manual and Report – is probably the base document for learners of the language. We must emphasize very strongly that the Bourne Pascal is a users' package. It is in no way shape or form, intended as an instructional package. As a matter of fact, Mr. Bourne is considering writing an instructional system, but this will probably not be ready until Winter of 1983. This Pascal, therefore, assumes that the user has at least some knowledge of the Pascal language.

The Bourne Pascal started off some two years ago as quite a restricted interpretation of the language. However, it has undergone some ten or more updates, at each stage of which various improvements were made. It now, therefore, represents a full implementation of the language. As of July 1983 (the 5.3 version) the only serious restriction is that Records are not supported. These will, however, be supported in the 6.0 version due out in the Autumn of 1983. Incidentally, whilst on the subject of updates, Pascal is an excellent example of the benefits of the Molimerx liberal update policy. Even though the update may contain a large number of improvements, the charge is still only two or three pounds. Hence, there is no reason why the purchase of a current version should be delayed, simply because it does not contain something which a particular user requires, so long as he confirms with us that his functions are, so to speak, in the pipeline.

It is interesting to note that, in addition to the normal Pascal commands and statements, the Bourne Pascal includes several extensions which could be more familiar to TRS-80 Basic users. Some of these, for instance, are PEEK, POKE, RND, PLOT (SET/RESET), PRINT@ (AT) and INKEY. The editor is a straightforward screen-based editor which produces and accepts as input standard ASCII Text Files. The format used is compatible with the DOS commands, LIST and PRINT. It is also, in that it is straight ASCII, compatible with a large number of word processors.

The Source program is written in free format and may be composed by using either the editor supplied or a suitable word processor. A number of switches are available at compilation time. When it is compiled the program is written to a file in standard TRSDOS load format. In order to run it, it is only necessary to make certain that the Run Time component of the package is on line. Pascal is supplied on disk, of course, and comes with a 30 page manual. The disk which is supplied is almost full, and, depending on the disk operating system used therefore, it may cause difficulties to single drive owners.

The Bourne Pascal runs all of the benchmarks from Personal Computer World with a considerably better speed value than the UCSD version. Indeed, some commands are quite dramatically better. The FOR loop, for instance, gives a result of 11 on this package, whereas the UCSD gives 86. Many of the other benchmarks are equally good.

The language supported is based on the draft ISO standard, but is fairly similar to the more popular microcomputer implementation from the University of California. It is perhaps important to note that the prime design criteria was to provide an efficient implementation tailored to the Z80 and to the TRS-80/Genie in particular. Incidentally, one question that we are frequently asked is whether the Bourne Pascal supports floating point, and GOTO. The answer is that it does.

The following is a list of, firstly the standard Pascal keywords supported and, secondly, the non-standard:

Standard keywords

AND	CONST	GOTO	REPEAT	ABS	EXP	OUTPUT	ROUND
DIV	DO	IF	SET	ARCTAN	FALSE	PAGE	SIN
MOD	DOWNTO	IN	THEN	BOOLEAN	INPUT	PRED	SQR
NOT	ELSE	LABEL	TO	CHAR	INTEGER	READ	SORT
OR	END	OF	TYPE	CHR	LN	READLN	SUCC
ARRAY	FOR	PACKED	UNTIL	COS	MAXINT	REAL	TRUE
BEGIN	FORWARD	PROCEDURE	VAR	EOF	ODD	RESET	TRUNC
CASE	FUNCTION	PROGRAM	WHILE	EOLN	ORD	REWRITE	WRITE
							WRITELN

Non-Standard keywords

ANDBITS	ERRORCODE	LOW	RANDOM	TITLE	VARPTR	AT	ERRORTRAP
MEMORY	PEEK	RND	TRACE	WORD	CALL	FAIL	MOVEDN
PLOT	SHLBITS	TRACEON	CLOSE	HIGH	MOVEUP	POKE	SHRBITS
TROFF	CMD	INKEY	NOTBITS	PRINT	STOP	TRON	INP

The Bourne Pascal is a first-class implementation of the language, sold by Moilmerx at a reasonable cost. We highly recommend it and look forward to the update in the autumn which will, as we have said, add Records.

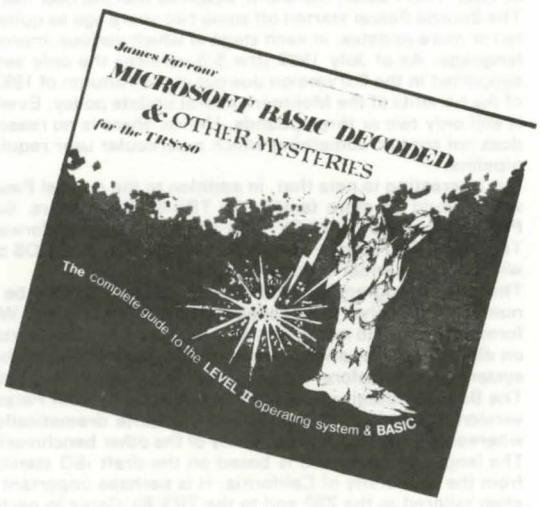
CRIBBAGE – PLAY THE COMPUTER AT CRIB

This program is a computer adaptation of the wellknown card game of Cribbage. There are a large number of variations of Crib being played, so we should explain the rules of this particular version. The cards are shuffled and cut at the beginning to decide on the first dealer and thereafter dealing alternates until the game ends. Six cards are dealt to each player by the dealer and the dealer has the ''Box'' hand. Each player puts two cards into the ''Box'' hand creating three hands each of four cards. The cards are cut and the ''turn up'' card is obtained. If this card is a Jack, the dealer is awarded two points (two for doing it.). The game then progresses to the pegging hand. The first to lay is the non-dealer. Each card is laid alternately, unless a player cannot lay. The pip value of each card as laid is added to the total of those laid and cannot exceed thirty-one. Upon reaching the closest to thirty-one, the series is discarded and a new one started until both players' cards have been used. The ''Box'' hand is not used in pegging. The scoring we think is fairly standard. A pair scores two points, threes score six points and fours score twelve points. Points are also scored, of course, for four of more consecutive cards of the same suite and for runs. When pegging is completed, scoring of the hands is made. The dealer having the ''Box'' hand always has his score taken last. If at any stage whilst pegging and/or scoring, a player's score exceeds sixty, that player wins. Hence, if a player is four points from winning and is not the dealer, since he has ''first take'' he stands a better chance of winning unless the dealer can peg his way home. Each hand of four cards is used in conjunction with the ''turn up'' card for scoring. The dealer has the ''Box'' hand score added to his own. The pegboard is graphically represented on the screen and playing cards are also represented graphically.

BLINK – BASIC LINK FACILITY

Blink provides the capability of passing control from one Basic program to another, maintaining all currently existing numeric and string values. With Blink the user can transfer (or chain) from one Basic program to another by executing a simple command. Blink preserves all current variables from one program to the next. Common data can be easily passed from one program to another simply by using the corresponding Basic variable names. The chained programs can either be larger or smaller than the calling program. Blink will expand or contract the contents of memory as required. The chained program can either completely replace the original program or can be merged by statement numbers. The merge option allows just a section of the program to be replaced, for example, a subroutine. The statement number where execution of the linked program is to begin can be specified. Thus, the linked program can start execution at any desired location. Blink will co-reside with other machine language programs as a special loading program is provided that allows the user to position Blink wherever he desires. So far as we know this is the first time that a utility such as this has been made available for a microcomputer. Although comparatively low in price this program provides an extremely powerful tool to the programmer enabling him to connect any number of Basic programs, which although could be connected hitherto, could not exchange variable contents between each other. Thus a program which up until now could not run because of insufficient memory can now be split into a number of different modules, which will interact with each other.

This book, ''Microsoft Basic Decoded and Other Mysteries'' is the definitive work on Microsoft's Level II Basic and gives full details of disassembled Level II ROM. It contains more than 6500 lines of detailed comments contained in 124 pages. In addition, there are six chapters covering every single ROM routine in depth. The book is being published by the same company that produced ''TRS-80 Disk and Other Mysteries'' described on page of the catalogue. The book is being published in the United States on December 15th and we hope to have stock in time for Christmas, but we cannot, of course, guarantee this. We are, however, accepting pre-publication orders now. As we have not yet seen a copy, we are unable to go into further details, but we think the reputation of the publishers with regard to their previous book on the TRS-80 Disk System is sufficient recommendation. The sales literature which we received from the publishers state that ''rumour has it that these comments are more complete than those of the original source code!'' Flow charts are given for all the major routines, giving the reader a real insight into how the interpreter works. Microsoft copyright is not infringed by this book as the user has to supply the actual disassembly. If any purchaser does not have a disassembler already, in order to promote this book we are offering our Disassembler (described on page of the catalogue) at half price, namely £6.00 plus 90p. VAT. This offer is only available when the program is purchased with the book.



FEBRUARY LISTING

ASTRO NAVIGATOR — NOT JUST A SPACE GAME

This is one of the most fascinating games that we have ever published. In fact it is so good that one can hardly call it a game, it is better described as a simulation. Coming as it does shortly after the recent successful Voyager probe to Saturn, it is particularly well timed. The software, programs the TRS-80 or Video Genie to produce a complete and highly accurate simulation of the solar system. All of the orbits of the various planets are correctly calculated, as are their orbital speeds and gravitational pulls. Each time the game is played, the members of the solar system are differently placed, but still in correct relationship to each other and to the sun. Hence every game is different and presents different problems to the player. There are only one or two small deviations from actual fact. One is that each planet has a mythical shuttle orbiting it from which, if you can get into orbit with the planet, you can draw fuel and so continue your journey. The purpose of the game is to blast off from the planet of your choice and travel throughout the solar system. There is no other purpose. There are no prizes, no free goes, nothing else. If you succeed in making a landing on another planet then your reward is the thrill of having been able to do so. And for some inexplicable reason, it really is a thrill. Probably the reason is that the game is unbelievably difficult because all of the physical laws and relationship are obeyed. Not many people are able to blast off from Cape Canavarel and those that have done so have been aided by automatic guidance systems. Although the player of this game has the help of a computer, it will only tell him the statistics of the journey. A typical print out is shown below. It is for the player to decide how much fuel to take on, what thrust to use, whether to try and blast off slowly so that fuel can be taken on at the orbital station (this, incidentally, is mandatory where the gravity is very high, such as Jupiter as it is not possible to take off with enough fuel to attain escape speed and still have some fuel left with which to make your journey) or whether to try and get away from the home planet as quickly as possible. Apart from the flight data shown below, the astronaut has three maps to which he may refer. The first is of the outer planets, the second of the inner planets and the third a close up view, if he is in the proximity of any planet. Superimposed on these maps is the present position of the spaceship together with the last few positions which have been occupied. It takes a considerable degree of experience to play the game in order to make any headway with it at all. One has to get used to a whole new mode of travel where the attitude of the craft may bear no relation whatever to the direction in which it is travelling. At all times gravitational pull, the laws of momentum and many other considerations are acting on the craft's course. Furthermore, journeys are judged in lengths of months and years. For instance, if you take off from Earth and have a look at the map to see where Jupiter is, then point your craft in that direction, and blast, there is not the slightest chance that you will get anywhere near Jupiter because by the time you get there it will be long gone. Just as the Voyager used Saturn to pull itself, like a sling shot, onto a different path so the player of Astro Navigator can use the gravitational pull of planets to change course without having to use valuable fuel. Most of the time, of course, the craft is not under the control of its motors at all, but is coasting through space, affected, as we have said, by many different laws of nature as it goes. Frankly, we are not sure why the game is so appealing, graphics are used but are really only subsidiary to the play. Probably it is the simple fact that one is entirely on one's own out there and will fail or succeed entirely by reason of one's own skills. For what it is worth, it is one of the very few programs in which we got so engrossed when testing it, that the session has gone on ever since! Astro Navigator is written in Basic for 16K cassette, but is also compatible with Disk Basic.

```
                    FLIGHT DATA

FLIGHT TIME:    0  YEARS          81  DAYS          0  HOURS
                2  MINUTES                  11  SECONDS
VELOCITY:  523.795 KM/S        PATH ANGLE:  179 DEGREES

FUEL REMAINING:   699980  KG        ATTITUDE:   45 DEGREES

NEAREST BODY: SATURN ,  3.38604E+09  KM AWAY. PATH ANGLE:  158 D
EGREES
                    PRODUCING ACCELERATION OF 3.31436E-09 M/SEC2
BODY WITH STRONGEST PULL: SUN ,  3.70694E+09  KM. AWAY
                    PRODUCING ACCELERATION OF 9.69332E-06  M/SEC2
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BASKETBALL — A REALISTIC SIMULATION

Another highly graphically orientated machine language action game with sound. Each game last four minutes and either two players take part or one player plays the computer. The graphics are based on a three dimensional depiction of a basketball court on which there are two players. One is controlled by each human player if two are playing, or when a human player plays against the computer the home player is controlled by the computer. The appeal of the game is its realism. The court player may be controlled in one of four directions, may dribble and shoot for the basket. The player who scores the most baskets in the four minutes of play wins the game. Available on cassette for 16K machines and for the Video Genie. Also available on disk requiring a minimum of 32K and a single drive.

QUAD — MIND BENDING

Quad is three dimensional noughts and crosses. As its name implies, it is played on a cube of four layers each with four ranks. Like noughts and crosses, the aim of the game is to get crosses or noughts in a line either horizontally, vertically or diagonally. The cube is depicted graphically on the VDU and either two players may take part or a single player may play the computer. Four levels of difficulty are provided and a time clock is also included for each move. A particularly important feature of the game is that the cube on which the game is played may be rotated so that the player can see it from a different angle. A number of commands are provided including setting up previous positions, backing up to a previous position, progressing to the next position, reversal of order of play and switching of opponents. This is a complex game of strategy in which the player will need all of his skills. Available on cassette for 16K machines and for the Video Genie. Also available on disk requiring a minimum of 32K and a single drive.

INSTANT SORT / SEARCH DATABASE — UNBELIEVABLY FAST

Everything in electronics takes a finite time, consequently nothing can be instantaneous. However a database that will search 500 records and sort the names into alphabetical order in 1½ seconds, that will go on to do the same thing with 1,000 names in only 2½ seconds, is fast. If you add to that the ability to search 500 or 1,000 records for a specific range of names or ages or sexes or whatever, in

such a small amount of time that it is not worth timimg it, then the program deserves to be described as instantaneous. Especially as these times are attained on a standard Level II TRS-80. These results are achieved, obviously, by some very clever machine language coding. This however is not enough. After all GSF from Racet will sort 1,000 arrays in about 11 seconds and that is indeed a clever program. No, in order to achieve the results required from this program it is necessary to change one's entire overview of database. There are many databases available for the TRS-80 now. All of them have been designed to store as much data as possible, as easily as possible. Not as an afterthought, but nor as a prime design requirement, they have also incorporated as fast a sort as was practicable. This program was designed from the outset to achieve unbelievably fast sort and search times. Indeed we do not recommend this database for application in which fast sorting or searching is not a prime requirement. And what are the applications? It's a hackneyed phrase to say that they are limited only by the user's imagination, but that's about it. Let's take an example. Suppose you are running a marriage or data bureau. An ordinary database will file all the names and addresses away together with the necessary information as to sex, age and so on and with some you would be able to sort the list, so that only only people with similar characteristics were eventually obtained. With this database you could, for instance, file the name, sex, age, category of hobby, category of chief interest, vital statistics and other data so that at the touch of a button you could instantaneously display on the screen all women of a certain age with certain vital statistics, living in a certain area. You could also display men with similar (excluding the vital statistics!) data that fall into similar categories. And all of this almost instantaneously. Not everybody runs a marriage bureau, but other applications are not hard to think of. Estate agents can file details of property away so that they can instantaneously obtain data on houses in a certain area or of a certain size. Doctors can reach information as to patients with similar diseases, ages or whatever immediately. In the home, a record library can be stored and every record by a certain composer written in a certain year can be accessed without delay. The list of applications is endless. For any use where it is important to extract information within a certain range or it is important to sort information, this database will find a use. The prime commands and features of this program are as follows:

Datafile creation

1. Create a file
2. Add a record
3. Delete a record
4. Display a record
5. Tape a file
6. Amend a record
7. Display the file data
8. Load a tape

Sort/Search

1. Sort up or down
2. Page forward or backward
3. Select a range for search
4. Select or exclude a category
5. Select or exclude on initial letter
6. Resort records in a sort
7. Sort all new records
8. Extended sort
9. Arithmetic
10. Display file data
11. Load a tape
12. Printout sorted data

The data is displayed in columnar form and the data may be alphabetical, alphanumeric, integer or decimal. The number of columns is from 2 to 10 and the records may contain a maximum 44 - 60 characters depending upon the number of columns used. Columns may be of any width within the screen capacity but integer or decimal columns more than five or six characters wide respectively will not have the option of searching within a range. The program consists of two parts. The first is used for entering the data and the second for the sort or search. The second part overlays the first when it is loaded so only 4K of memory is used by the entire program. The remainder of your memory space is available for data. The amount of data that can be contained will of course depend upon the amount of memory available, but as a rough guide a 16K user will be able to manipulate at one time 250 records of 39 characters each or 514 records of 17 characters each. As a further rough guide on sorting speed, the time to sort 1,000 records on fields of random strings of random length, or of random number between 1 and 99,999, averages under 2½ seconds. Numeric columns either integer or decimal may be arithmetically manipulated almost instantaneously. A total may be cast or an average taken for any numeric column up to five digits. This is so fast that when adding 1,000 numbers totalling over 50 million, only a slight hesitation can be noticed before the total is given. In summary, therefore, this program is ideal for any application concerning the manipulation of information whether it be business, personal or hobby which can be comfortably displayed as one record per line upon the screen and in respect of which it is required that super fast searches or sorts be carried out. The program is supplied on cassette. At this time it is not compatible with disk systems. A disk version is in the course of preparation. The cassette includes a set of data randomly generated which can be fed into part 2 of the program to demonstrate the fantastically fast sort and search features. Also available for the Video Genie.

Note to 1982 Catalogue Re-write

Instant Sort/Search grew from the above description to become one of our most successful programs. There have been many upgrades, additions and alterations. The original program was quite early on transferred to disk and has been made fully compatible with TRSDOS and LDOS and, so far as we know, the NEWDOS 80. In July 1981 a new module was added, ISS3, and now as this 1982 re-print is going to press, a new module, ISS4, is shortly to be launched. It may also be of interest to note that ISS is one of our programs that has been accepted for publication in the United States. It is, of course, compatible with both the Model I and Model III. The most important upgrade was the addition of the module ISS3, a description of which follows:-

1) The ability to exchange or swap columns. If, for instance, one has "name" as column 1 and "age" as column 2 in an existing file, these can be exchanged so that "age" is the first column and "name" the second.
2) Delete a column — This is self explanatory. The important point is that the space made free by an entire column throughout the file can be quite large and is added to the amount of free space for the program to use. In other words, by deleting a column the data file is shortened.
3) Add a column — Again self explanatory. This is the command by which a new column can be added.
4) Extend a column — The number of characters in a column can be increased with this command.
5) Reduce a column — The reverse of the previous. This can be a particularly useful command when not all of the spaces in a column have hitherto been used. In other words, there is a large amount of blank space in the file because of these unused characters. With this command this blank space can be converted into usable space.
6) Rename a file — This command allows the file to be renamed, and, of course, subsequent saving of it will reflect this new name and new update base.
7) Renumber — This enables the base number of the record numbers to be changed. Hitherto with a base of 0 the records have started at 1. With this command they can be changed to start at any number less than 7000.

These improvements have required that the program location be changed somewhat, so re-locater programs are included so the previous data can still be used. There have also been one or two enhancements to ISS1 and 2. The sort is now (believe it or not) a fraction of a second faster. Just after the last list went out, some improvements were also added to ISS2. These were incorporated in version 2.02, but have not been mentioned in a previous catalogue listing. The improvements permit the user to "mark" certain records whilst in ISS2 for either a change or a delete. After the marking has been done, the program is taken back to ISS1 whereupon the records marked come up automatically at the beginning of the run for action.

Instant Sort/Search is now an extremely powerful speciality database optimised for fantastically high speed sorts. The new improvements probably take it a little way over towards a general database giving it a wider appeal, but it should be borne in mind that it remains a database for customers who require extreme high speed of sort.

In addition to the improvements mentioned above, ISS2 for both the Model I and Model III versions have been speeded up and tests with random data now show files of up to 500 records are sorted on any one of up to 10 columns, numeric, alphabetic or mixed, in one second or less. Even with a thousand records the sort time is still under two seconds!

JUNIOR UTILITY – A TWO PASS DISASSEMBLER PLUS

Acorn call this program Misosys Disassembler, but to our minds this is a very misleading title because the program is so much more than a disassembler. For instance we are often asked for a program which will extract from a normal system machine language program its start, end and transfer addresses. This is one of the functions that this program will provide. It is only necessary to load Misosys and then select one of the commands with the normal system tape in the taperecorder and Misosys will display on the VDU the addresses mentioned. It seems to us that this is an important function because the other programs that will fulfill it such as the Monitors cost a lot more and sometimes the customer does not require the additional functions of a fully fledged Monitor. Furthermore, Misosys will load into memory any normal system tape and again display the addresses mentioned above. As Misosys itself provides an exit to Basic it is possible to load the machine language program, return to Basic and then using the SYSTEM command access the program which was loaded. With this second feature, of course, the program is actually loaded into memory so it must not conflict with Misosys itself. The Disassembler portion of the program is firstclass and far better than the regular Disassembler which we stock as shown on page of the catalogue. First of all it is a two pass Disassembler. That is to say it makes one run through the memory area which it is to disassemble and constructs a table used for the generation of symbolic labels. A quick word for those customers not familiar with machine language programming. When the commands in a certain area of memory are going to be used frequently (in other words a subroutine), in the assembly process a label is given to the start of the subroutine. When access is required to the subroutine, the label is called rather than its actual address. The advantage of this, of course is that as the call is to a label rather than an absolute address, the address can be changed from time to time without affecting the label. If, for instance, the author in writing the program suddenly decides that at the beginning he wants to add some more code, if he had used absolute addresses he would have to go through each call to that address in the program and alter the address number. If, however, he used labels then it would not be necessary for him to change any of the addresses because the assembly process will do it for him. Simple disassemblers only make one pass through the program and therefore are unable to reference any of these label addresses. A two pass disassembler, however, goes through the program once and extracts the appropriate addresses and builds a table, which is subsequently used in the second pass so that the final disassembly contains all the label points in the program. We used the words ''points'' because obviously the Disassembler is unable to know what actual label name was used in the original program. In the disassembly therefore, are incorporated symbolic labels generated for address and sixteen bit numeric references which occur within the disassembly area. References preceding the start address of the program are output as equates (EQU) and these can be optionally suppressed. The disassembly output may, of course, be directed either to the screen or to a line printer and is fairly normal in its format. It consists of the address, the hexadecimal contents, a line number, opcode, operand and, finally, the ASCLL EQUIVALENT OF THE HEXADECIMAL CONTENTS: The Disassembler is easy to use and either page or continuous display can be chosen for the VDU. In addition to the above features, Misosys will create a source cassette tape suitable for inputting into either the Tandy Editor/Assembler or the Microsoft Editor/Assembler Plus. This is, of course, a particularly useful feature when it is intended that a machine language program should be amended or modified. It is only necessary to feed it into memory and then make a source tape with Misosys, which can be fed into the Editor/Assembler for further processing. Misosys is for tape and disk systems. It uses the Clear key to revert back to the Menu after a disassembly so to that extent it is not compatible with Video Genies which do not have the Clear key fitted.

Note that a new version of Junior Utility is now available and is described later in this catalogue.

CREOLE LOBSTERCATCHER – A NEW STRATEGY GAME

The theme of this interesting new program is that the player is a fisherman in the Caribbean and when he commmences play he owns one boat, six lobster pots and no cash. He may fish inshore or offshore and in the case of the former, he can earn £2 per pot per day and in the case of the latter, £6 per pot per day. The hazards of fishing offshore, of course, are far greater than those of fishing inshore. For instance, when fishing offshore he can meet high currents, in which case his offshore pots will probably be lost. If he encounters a storm, then all offshore pots and boats are lost. However with many storms a day's warning is given of its forthcoming occurrence. Bad weather can be experienced offshore, in which case there will be no offshore catch, but inshore prices double. Occasionally, the tourist season will come round and catch prices will double. We are not quite sure what this one means, but occasionally a Lobster Convention will take place, an announcement will be given one day before and offshore prices treble. Carnival Days will be declared occasionally, whereupon the tourist season will come about and there is a one in five chance that half of your crews will run off with your boats. As you might expect, various other surprising events take place on Carnival Day. Pay day takes place on the last day of every week and is accounted as £80 per week on a daily basis. If there is insufficient cash to pay them, the crews will run off with the boats. Play is on a daily basis. Altogether, this is an interesting program which should supply amusement for all.

NUMB – RECOVER PROGRAMS AS WELL AS RENUMBER

This program is a utility for renumbering, merging and recovering programs. The renumber section of the program is reasonably luxurious in that it is not just a straight renumber. It is possible to renumber a selected portion of the program and warning is given of any unreferenced lines in that program. The merge feature is the normal one whereby one can block off a resident Basic program, load or type in another one, load and then rejoin. This can be done as many times as is required. The recover section of the program is intended to be used when a resident program is inadvertently lost by, for instance, typing NEW by mistake, or unintentional reboot. Obviously, in order for this feature to work, the vectors and other Basic data addresses must have been left untouched. The program may be put on to disk, but as both TRSDOS and NEWDOS have renumbering features built into them, disk users will obviously find the program rather unattractive. NUMB is compatible with the Video Genie.

VISICALC – AN ELECTRONIC BLACKBOARD

Visicalc is a hard program to explain. In some ways it is very similar to our matrix Manipulator shown on page of the catalogue in that it operates on the basis of manipulating a matrix, which of course is essentially a grid made up of rows and columns. In some ways the Manipulator is better than the Visicalc in that it is a ''dedicated'' manipulator. On the other hand, Visicalc is easier to use from the point of view of general purpose applications. In order to understand Visicalc, it is best to try and visualise a very large blackboard, or if you wish, a very large sheet of paper. On the blackboard is drawn a grid of 254 squares high by 63 squares wide. Now imagine a tube a couple of inches wide which you put to an eye and through which you look at the blackboard. Only parts of the blackboard will be visible. Visicalc constructs the grid or matrix on the blackboard and the VDU is the view that one sees through the tube. By moving the tube over the blackboard one can see various parts of it and in exactly the same way, by using the cursor controls one can move the VDU over the Visicalc electronic sheet. The usefulness of Visicalc is that in each square one can put various values and define the mathematical relationship between them. Taking a very simple example, if one put the figures ten and twenty in two adjacent positions and defined the function of those positions as addition with the result in another square, then the two first squares would retain ten and twenty and thirty would be inserted in the third one. The formula remains static until such time as one changes it. Hence it is only necessary to change one of the squares to twenty for the third square to automatically change to 40. When one considers that Visicalc can handle quite complex formulas and a large amount of data, it does not take an awful lot of imagination to realise that this is very useful in the manipulation of data, particularly when only a few of the items have to be changed, as such changes will affect the entire block of data. Furthermore, Visicalc can be used for almost any problem that would normally be explored with the calculator, pen and paper.String labels may be used to entitle columns and rows and various other useful functions are provided, such as screen splitting, to make Visicalc into one of the handiest manipulator programs around.

Note to 1982 Catalogue Re-write

Since Visicalc was first issued it has been made available for both the Model II and the Model III Tandy. The original is also, of course, compatible with the Genie Model I and II. Although the old version for the Model I worked on the Model III, a new version has been issued which, it is said, contains many improvements. At the time of going to press with this 1982 revision, details of these improvements are not available.

PROBE – PERSONALITY EXPLORATION BY COLOUR CHOICE

A number of eminent men for some long time maintained that as it is our personality that decrees our taste in various matters, so that taste must reflect a person's personality. Indeed, we think we are right in saying that this very general theory is widely used in a number of applications in psychiatry. One of our tastes is that of colour. Some people prefer one colour, some people prefer another. Probe is a program which ''forecasts'' the personality of the user of the computer on the basis of his choice of colours.It comes complete with eight colour swatches. The user chooses the colours which he likes and answers the computer accordingly. The personality is then cast. This is the general theory of the program. In actual use the operator must examine the colours without spending too long on it and without associating the colours with anything else, for example the colour of the furnishings in the room or clothing. The operator must simply choose the colour fairly quickly which appeals to him most. The author of the program recommends the colours be placed in a pile in their preferred order and then the operator should repeat the selection after about five minute in order to give the subconscious time to respond to the colours of the first choice. The purpose being to give greater validity to the second choice. On trying the program out, we have skipped this stage and we must say that we have attained some rather surprising results, in that the printout and personality on the screen does seem to fit that of the operator. The program outputs quite a large quantity of information. The first is concerned with the amount of conflict present in the personality of the user. First he is given, in the form of a percentage, information as to how his choice compares with the national average. This is followed by information as to the amount of conflict within the personality of the user. Eight areas are examined for conflict. Next an anxiety rating is forecast on a scale from 0-12, representing calm to anxious. In other words, the higher the number, the more anxiety there is present in the personality. Finally, a colour decode is carried out. The computer, in fact, accesses about 50K bytes of data to compile the colour decode. It lists the user's desires or behaviour as dictated by those desires, the existing situation and its influence on the user, characteristics under restraint, details of the characteristics that are being suppressed within a personality and are therefore causing anxiety and, finally, any areas which are causing stress. The program is extremely easy to use and as we have said, on the occasions that we have used it, the results do seem to bear some relationship to the personality of the user, but as with all programs of this type, we must make the general disclaimer that we cannot guarantee the results! Due to the large amount of data which is accessed by the program, the program is disk orientated and is not available for tape.

SUPER UTILITY PLUS – A COMPLETE DISK ACCESS PROGRAM

As its name implies, the purpose of Super Utility Plus (SU+) is to provide the user with almost every conceivable feature that he could possibly need with regard to accessing disks and disk drives, within the one program. Before we describe it, there is one thing that should be mentioned. The author is Kim Watt of the United States who is, as customers will probably know, a well known programmer, particularly specialising in disk operating systems. When he wrote SU + he did so with the intention of making it uncopyable. Nothing created by man cannont be undone by man, so it is in fact not uncopyable, but to the majority of customers it will be. This seemed to us to be unfair, as we have always maintained that a user should be able to at least make a backup of any program which he buys. We therefore made arrangements with Mr. Watt that every copy of SU + that we sell will, in fact, contain two disks, the one the backup of the other. Hence if one becomes corrupted it can be returned to us for replacement (which incidentally, has to be done from the United States) and the backup can be used. The disk comes with a Registration Card and we most strongly recommend that the purchasers fill out this card and send it back to Breeze Computing (Mr. Watt's Company). If this is not done, the repair facility will not be available to the owner and furthermore he will not receive notices of updates. With a program such as this, the latter is most important.
SU + may be configured to read single or double density disks and tracks of any number up to 80 with any standard stepping rate. The directory may be on any track, any standard delay may be used, and high or low speed clocks are acceptable. In other words, within all reasonable limits, SU + is usable with pretty well any disk configuration or DOS. There are eight main sections to SU + and a list of these with their individual commands follows:-

Disk Zap

1.Display Sectors
2.Versify Sectors
3.Compare Sectors
4.Copy Sectors
5.Copy Sector Data
6.Zero Sectors
7.Reverse Sector Data
8.Exchange Sectors
9.String Search
10.Sector Search
11.Read ID Address Marks
12.Alter Data Address Marks

One of the more interesting features of the Zap section is the ability to reverse sector data, the mind boggles at the purpose of having the data that was at 00 now at FF and so on throughout the whole sector, but no doubt somebody will come up with a good use for it. The author suggests that it has definite possibilities in the area of disk protection. The ability to read ID address marks has been added as has the ability to change them. Although sectors could be exchanged with SU, it has now been made a lot easier with SU + .

Disk Purge

1. Kill Selected Files
2. Kill by Category
3. Remove System Files
4. Remove all Passwords
5. Disk Directory
6. Zero Unused Entries
7. Zero Unused Granules
8. Change Disk Name
9. Change File Parameters
10. Check Directory

Disk Format

1. Standard Format
2. Special Format
3. Format without Erase
4. Build Format Track
5. Write Format Track
6. Software Bulk Erase

Disk Backup

1. Standard Disk Backup
2. Backup non standard disks

These two commands require some explanation, or rather the second one does, for the first just carries out a disk backup of any standard disk. It has one or two features over and above the normal Backup or Copy commands, but essentially this is what it does. The second command, however, is of great importance, for the authors claim that with it, any disk, whether protected or not can be copied. As a matter of fact this is not true. We have come across some programs that cannot be copied with SU + , but it is fair to say that they are few and far between. Essentially what the utility does is to make the first pass through the disk reading the track and format layout and making a note of whether the format is standard IBM or not. It then copies the data and formats a blank disk as a mirror copy of the original. The data is then copied on. Normally with non standard or protected disks this will work, but as we have said, sometimes it does not. It is essentialy a matter of trying it and seeing.

Disk Repair

1. Repair Gat Sector
2. Repair Hit Sector
3. Repair Boot Sector
4. Read Protect Directory
5. Un-read Protect Directory
6. Recover Killed Files
7. Move Directory
8. Display Directory
9. Check Directory
10. Clear Unused Entries

Tape Utilities

1. Read Tape
2. Write Tape
3. Verify Tape
4. Copy Tape

These are strange utilities to find in a disk program, but they are, as a matter of fact, extremely useful. There are the normal Read, Write and Verify sections, but the copy tape can be very useful. In order to use it you must have two recorders and what it does is to take

the signal in from one, polish up the pulse wave forms a little and send it down to the other. Unfortunately it is not possible for a checksum to be carried out at the same time. Accordingly one really needs a pretty strong specimen of the program in order to copy it.

Memory Utilities

1. Display Memory
2. Move Memory
3. Exchange Memory
4. Compare Memory
5. Fill Memory
6. Reverse Memory
7. Test Memory
8. Jump to Memory
9. String Search
10. Input Byte from Port
11. Output Byte to Port
12. Memory to Sectors
13. Sectors to Memory
14. Memory to Track
15. Track to Memory

File Utilities

1. Display File Sectors
2. Compare Files
3. Copy Files
4. Disk Directory
5. Free Space
6. Offset a File
7. File Locations
8. Drive Status
9. Sector Allocation
10. Build a File
11. Clear a File
12. Disk Allocations
13. Compute Hash Code
14. Compute Passwords

The first item is an easy way to inspect files on the disk. The second is a comparison feature which is useful in that files are compared byte by byte and any mis-match is pointed out. The Copy Files routine is handy so that one can carry out this chore whilst still within SU+. The Disk Directory feature gives not only the name of all files regardless of their status, it also gives the number of tracks on the disk, the number of free granules and free files. It is certainly a lot easier than going to the appropriate track and reading it all off the directory entries. The Free Space is similar to the same utility in TRSDOS and other DOS's. The File Offset is similar in some ways to LMOFFSET in NEWDOS. It allows you to load a file into memory at the location of your choice or load a file into memory at one location and then have it moved to another location and executed. You may even disable the interrupts. One of the features of this group that we use the most is the File Location which gives you complete information about the location of files on a disk. Drive Status is self-explanatory and the Sector Allocation is really the reverse of File Allocation. It gives you the name of the file present on a given Drive, track and sector number. Building a File enables the user to pre-allocate space on the disk, the big advantage of which is that the file is far more contiguous than if it had been written normally. Clearing a File not only clears it, but erases it, so should only be used with the utmost caution. Disk Allocation is rather complex to begin with, but one gets used to it. Graphic representation is given of the entire disk and its granule allocations. The last two features are again self-explanatory. Compute Hash Codes is moderately common now. We never seem to have any luck here with password decoding programs, sometimes the decoded password works and sometimes it does not. We have tried this utility on one and it worked, but we are not at all sure that we would want to guarantee it for all passwords.

Note to 1983 Catalogue Re-write

Super Utility Plus has been up-graded very considerably in the 3.0 version as follows. It is important to emphasize that this is not an update as such; it is a complete re-write of the program by Kim Watt. SU+ has achieved quite a lot of fame recently. There have been several reviews in the last few months which have literally been nothing short of "rave" reviews and, of course, in January it was awarded the first place in the 80 Micro Computing readers choice competition. Without a doubt, it is an indispensable utility. Although the SU+ manual was, and indeed is, enhanced by the Inside SU+ book, many customers have felt that the documentation did not come up to the quality of the software. Hence, it is encouraging to note that the new version is accompanied by a completely new manual in a loose leaf binder. SU+ is already described very thoroughly in this catalogue. The new features in version 3.0 as compared with version 2.2Z are:

1. Automatic double density adaptor recognition.
2. Boot up on 35, 40 or 80 track drives.
3. Limited automatic DOS recognition.
4. Limited automatic density recognition.
5. Double sided support for LDOS, DOSPLUS and MULTIDOS.
6. New easy to use DOS specifiers.
7. Tandy's double density TRSDOS 2.7DD supported.
8. Multidos support fully implemented.
9. Improved NEWDOS 80 support, but only with standard PDRIVE configurations.
10. Improved tape utilities.
11. New easy to use Configuration. This one is particularly welcome. Although the configuration procedure is easy on the 2.2Z once one understands it, it can give quite a few headaches before then.

The upgrade is not cheap, although a fair percentage of the cost is reflected in the poor dollar pound situation at the moment, which hopefully will change and be reflected in the price in the not too far distant future. Because of this the 2.2Z and indeed even the original plain Super Utility will continue to be supported by both Powersoft and ourselves. Customers should not feel, therefore, that they are in any way compelled to upgrade. The cost is shown in the Index under Super Utility +.

CP/M – AN ENHANCED VERSION FOR THE MODEL II

The CP/M is a disk operating system written by Digital Research in the United States. We have been rather late in coming to market with CP/M, mainly because of its somewhat unique history. Digital only supply it for one particular main frame machine. However, they do grant licenses so that the original CP/M can be adapted for other computers. They have granted licenses to three or four companies for adaptation to the TRS-80 Model II and it has taken us some time to assess the various systems and to decide whether or not to accept the license which Digital offered us. In the end we came to the conclusion that although adapting it ourselves would save the customer some money in that the end price would be cheaper, he would not be getting such a good product, as the U.S. suppliers who have licenses have had so much more experience than we have with the program. It then became a matter of choosing which one to stock and we have elected to stock the CP/M2, which is an adaptation by Pickles and Trout of the original Digital Research program. In addition to the adaptation they have also added a number of utilities. CP/M is, of course, a disk operating system and takes the place (in the case of the TRS-80 Model II) of TRSDOS. Disk operating systems, for some unknown reason, are a matter of taste and seem to be subject to fashionable trends. The big advantage that is claimed for CP/M is that there is more software written for it than for other systems. This is probably undeniably true, but the majority of it is American written software and although, as we have said before, it is a matter of taste we have never really felt the need for anything more than TRSDOS. However, if customers wish to put CP/M on to their Model II, then we can highly recommend this one.

There are three Pickles and Trout versions of the CP/M available for the Model II. The first and standard version is for the single-sided floppy disk normally found in the Model II, the second is for a double-sided floppy disk and the third for hard disks fitted with the Cameo hard disk controller. At this time we are only stocking the standard version, but we can, of course, obtain any of the others to order. CP/M2 is extensively documented. It comes with a set of the original seven Digital Research CP/M manuals, plus a special manual dedicated to the Model II version. Obviously, therefore, it is impossible to describe the system fully, but we will endeavour to go through some of the advantages of CP/M2.

Under CP/M2 the disk capacity of the Model II is increased by approximately 100,000 bytes. Under TRSDOS 509,184 bytes are contained on a diskette, but on CP/M2 this is increased to 610,304 bytes on a single-sided, double density diskette, in other words a standard Model II diskette. The double-sided version increases this to 1.2 megabytes and the hard disk version contains 10 megabytes.

CP/M2 automatically detects the density of a diskette and treats it accordingly. Hence, mixed density systems can be run. In order to support the maximum variety of expansion drives, CP/M2 allows you to specify the drive head step rate independently for each drive on the system. Available step rates are 3, 6, 10 and 15 ms. Multiple drive software can be run with a single drive system under CP/M2 as it will automatically enter a mode of operation which allows it to simulate a four drive system. This is of particular importance when either running multiple drive software on a single drive or writing on a single drive for multiple systems. Disk access speed is increased with CP/M2. As a comparison, Basic which is about 16K takes five seconds or so to load under TRSDOS. Under CP/M2 an 18K program loads in about 2½ seconds. The serial ports of the Model II become more useful under CP/M2 as they are tied into the normal CP/M input/output structure and may be accessed directly by programs that have special input/output requirements. The serial port drivers support three common types of handshaking to permit them to work with a wide variety of peripheral devices. ETX/ACK and XON/XOFF handshaking, used by many printers, are fully supported. Furthermore, for other devices you can set up the driver to monitor the RS-232 status lines Clear-To-Send and Data-Carrier-Detect to determine when data can be sent and received. A special utility routine is supplied with CP/M2 which displays the current status of the serial ports and allows the various parameters to be changed at will. Nine baud rates are available. 1, 1½ or 2 bits may be programmed and 5, 6, 7 and 8 bit word lengths are available. Parity may be set to even or odd or turned off. The RS-232 status line outputs RTS and DTR may be set to either high or low.

CP/M2 has a very advanced screen driver built in permitting a higher console interaction than is available with TRSDOS. Approximately 20 screen functions are available, including split screen mode and, of course, reverse video and graphics. CP/M2 has a 64 character type ahead buffer for keyboard input. This feature permits the user to continue typing while the computer is busy with other operations, for instance, disk input/output. It also allows several commands to the computer to be "stacked" for sequential execution. The console input driver, incidentally, includes a Break filter which enables the programs to disable the Break key on the keyboard when they don't want to be interrupted. The input/output driver for the Centronics port provides three options that allow it to work with most printers. It can be set up to take care of the double spacing that occurs when a printer with auto line feed is used with CP/M. Also available is form feed emulation for printers that do not have form feed capability and the driver can be set up to insert form feeds for automatic pagination. All of these options can be turned off for printers that can do it all themselves. A special set of System functions is provided to allow high level language programs perform tasks such as input/output set up, setting and reading the clock, and direct input/output without writing any machine language routine.

Pickles and Trout have added approximately fourteen of their own utility programs to the original CP/M utilities, to make the CP/M2 a very attractive package indeed. Due to the large amount of documentation which accompanies this software, shipments will normally be by Parcel Post unless other arrangements are made.

Fully supported software

For what is believed to be the first time in software development, Molimerx Ltd. announces their new policy of fully supporting any software published by them. This means that once a program is purchased from us, then you have it for life. Furthermore, this support extends to any part of the globe. If, for instance, your dog chews up your disk, or your daughter re-records a program cassette with some rock and roll, we will replace this software free of charge. The only cost for which the customer will be liable will be a charge for the media if this has been destroyed.

Molimerx is also adopting the policy of updating software published by them at a nominal charge. This is, of course, over and above the normal corrections of any bugs that might appear in the programs after publication. If one of our authors changes a program so that some features are bettered, then the customer need only send in his original tape or disk and we will update to the new version. Unless otherwise stated in our sales literature, there will be a standard charge for this service, namely £2 plus V.A.T. plus postage and packing. Should we find it necessary to supply new media there will, of course, be an additional charge. The updating service mentioned above will also be relevant if a customer changes his machine, so long as that change is within limits of compatibility. In other words, if a customer has bought a disk for the Tandy Model I machine and then sells that machine and changes to a Model III, we will update to the Model III version at the above mentioned cost. There is one restriction to this offer and that is that the program must be within our control, that is to say, it must be one that has been written by one of our authors or one for which we hold licensing rights. So the programs that do not come within this update service are mostly restricted to programs which we import pre-packaged from, for instance, Microsoft or Tandy. With these programs it will be for the original manufacturer to decide their own update policy.

MAY LISTING

LDOS – THE FIFTH GENERATION DISK OPERATING SYSTEM

It would almost be possible to write a book on the disk operating systems for the Model I TRS-80. It all started with a gentleman called Randy Cook who wrote (and according to him got paid very little) the original 2.0. This was modified by him to the 2.1, but the 2.2 and 2.3 were Tandy patches to the original. In other words, all of the TRSDOSs emanated from Cook. He had various difficulties with Tandy and branched out on his own to write the VTOS 3.0. This was licensed to a company that went out of business. VTOS 4.0, we believe, was marketed by Cook himself, but we understand that for personal reasons he has given this up. Meanwhile, 2.1 was patched by Apparat who also added a number of useful utilities and called it Newdos + . We feel that it was the first timely operational DOS for the Model I. Then came Newdos 80 which, although original, is still based on the TRSDOS's in the sense that it enhanced them rather than struck a new course. In any event, the important point so far as the "History of the DOSs" is concerned is that they have all really emanated from Randy Cook. LDOS is the first entirely new DOS written by third parties. It was written by no less than 8 first rank programmers, most of whose names would be familiar to the average TRS-80 user and they range from Lance Micklus of Star Trek fame to Roy Soltoff who wrote Junior Utility and many other excellent programs. Six other programmers were in the project in an advisory capacity. Again, at least two of them are household names. Some of the bug free coding of Cook's has been incorporated and credit is given to him in the manual. The important point is that the LDOS team were able to plan their operating system with all of the previous DOSs in their minds and with full awareness of both the good and the bad parts of them. The result is a disk operating system which we feel should become the industry standard.

One of the serious and valid criticisms of the DOSs has been the poor documentation. We have always thought that the original Tandy book was a good one, but certainly the Tandy documentation for 2.2 and 2.3, Apparat's documentation for Newdos+ and the documentation for the VTOSs are not of a high standard. Newdos 80 documentation is complete, but tends towards the "computerese". This, therefore, was another matter upon which the team could look back on and they have made certain that they have not fallen into the same trap. The documentation that accompanies LDOS is in a binder and the layout is reminiscent of the original Tandy book. Each library command, for instance, starts with a short description of what it does, then gives the syntax and parameters and, finally, comments are made on its application and use together with examples if necessary. The language is understandable and it avoids computerese as much as possible. Parenthetically, one word usage that we cannot understand is that a track is called a "cylinder". The mind boggles at the logic of this!

The team were sensible in planning LDOS and obviously a very great deal of thought has gone in to what it should contain. They seem to be well aware of the maxim that there is no point in re-inventing the wheel and programs which are well written and bug free and which have been issued previously are not included in LDOS. The space made free thereby is used for new utilities and features. Generally speaking, however, it is true to say that LDOS contains almost all of the features of previous DOSs. The only exception that we personally would have liked to have seen in LDOS is a similar directory check to that in Newdos. A particularly nice feature, bearing in mind that one can only get a certain amount on one disk, is the fact that the enhanced Basic — called LBASIC — is made by the user himself. Two files come on the disk called LBASICP1/FIX and LBASICP2/FIX. All the user has to do is to take his copy of the Microsoft Basic on TRSDOS and run the command PATCH LBASIC/CMD .BASIC:0 USING LBASICP1/FIX:0 and then run the same command, but with LBASICP2 and he has an enhanced Basic. Considerable space is thereby freed on the disk for other uses. As is pointed out in the manual, this procedure also saves the end user quite a bit of money as royalties do not have to be paid to Microsoft, so the end user is not paying for something again, which he already has.

Very broadly speaking, LDOS may be split up into the following sections: Library commands, Utilities, Device Drivers, Filters, Job Control Language and LBASIC. We will deal with these separately shortly, but first there are one or two further general points that should be made.

LDOS supports upper and lower case and indeed includes its own driver. It is not, therefore, necessary to load your own drivers. An important point is that the system supports both the Tandy lower case modification and the Electric Pencil one. The user may choose whether to display unshifted or shifted upper case and vice versa. LDOS is, of course, compatible with Scripsit and Electric Pencil.

Keys may be assigned special commands, functions or characters with the Key Stroke Multiply feature. Unlike many shorthand programs, LDOS does not use the Shift and an alpha key, but the Clear and an alpha key. Due to this it is necessary to press the Shift and Clear key to clear the screen.

The Shift and Break key will reselect a 5" disk drive that has timed out and hung up the system. As we all know, this occurs when a drive door is left open or no diskette is in the system. This is quite an important feature because it is thereby no longer necessary to reset the entire system when such a catastrophe occurs.

The disk drive can be 5", 8" or hard disk and LDOS will support double or single sides and double or single density. The maximum track count on floppy disks is 80. Obviously hardware modifications will be required before some of these features can be used. The expansion interface can be the regular Radio Shack interface, the Lobo LX80 or the Video Genie expansion box. It is appropriate to mention here that so far as we know at the time of going to press, LDOS is completely compatible with the current Video Genie. Obviously with such a complex system we have not been able to go through every single command on the Video Genie. Should any user come up with incompatibilities, we would like to hear of it so that we can advise Lobo International. The RS-232 ports are supported by LDOS (although again we have not had time to try the Video Genie one) and LDOS also supports the Percom Doubler.

LDOS is what is called Device Independent. Users who are not familiar with VTOS (in which Device Independence was a major feature) will have to take it from us at this stage that this is an extremely useful and efficient function, as it is beyond the scope of this description to go into the full details of it. Briefly what it means is that your system device, such as the video display, printer, disk drives and keyboard can be routed or linked to each other in almost any way that you desire. It is even possible to create your own logical device. To give a very simple example, after a certain command is entered the input from the keyboard will be routed to the printer instead of to the VDU. Its route can even be to disk files so it is possible to type into a file!

The Boot system can be controlled by the user with the JCL features, which will be described later, and also with the single key strokes. For instance, powering up or resetting with the Break key depressed will cause the machine to go directly into Level II Basic. The Clear key will prevent any configuration file from being loaded. This configuration would be created and stored by SYSGEN, a Library command, again to be described later.

The System has an inbuilt key repeat feature, that is to say holding the key down for about ½ second will cause that key to be repeated. Key debounce, of course, is also included. Both of these features may be disabled by pressing the up arrow on power up or reset.

LDOS includes the normal disk DEBUG utility. This is called simply by pressing the D key on Reset or power up.

As it is such an important feature, a brief mention should be made here of JCL, the Job Control Language. This is, in some respects, similar to the one in VTOS. Its principal function is that through the use of the DO Library command it is possible to create a sequence of commands and functions, store them in a disk file and recall and execute them at any time. JCL will allow for inputs, variables and conditionals. It even has a screen flash and audio tone alert modes. Probably the most important feature of JCL is to make the user's life a little easier in his day to day operation of the system. It is extremely versatile but somewhat complex. The authors of the manual quite rightly recommend that the user spends some time on understanding this section of LDOS so as to get the most from it.

LDOS is guaranteed by Lobo to be upward compatible with TRSDOS, that is to say LDOS will be able to copy all files and programs from existing TRSDOS disks on to LDOS formatted disks. The latter should be the only ones used in the day to day application of the System. The system is not, however, downward compatible, hence LDOS formatted disks should not be used with TRSDOS. To use files created on other operating systems, it is only necessary to move them on to LDOS formatted disks. There are some 4 or 5 commands in the System which makes this transfer an easily accomplished task. The manual states that disks created under Newdos are not guaranteed to be compatible with LDOS. We have been using the System for 4 or 5 weeks now and have not been able to trace any incompatibility to Newdos. In that LDOS is in competition with Newdos+ and to a greater extent Newdos 80, it is not surprising to see such a statement in the LDOS manual and although obviously we cannot reverse the guarantee of Lobo, we think it should be taken with a large helping of salt. Whilst speaking of competition, the two principal functions of Newdos 80, of course, were the ability to use various capacity drives on the same cable and the ability to create and use variable length records rather than the standard 256. Both of these features are available in LDOS and the format has been greatly enhanced.

Unlike some of the earlier DOSs LDOS at all times respect High Memory and its value may be viewed at any time with a Library command. LDOS always protects its own routines by moving High Memory lower in memory.

LIBRARY COMMANDS

When describing these Library commands, only important changes in commands, which exist in other Systems, will be mentioned. It should be borne in mind, however, that the majority of the LDOS Library commands contain enhancements to these existing commands. Thus the expression "existing command" will always mean that all of the functions in an existing command are available in LDOS but, additionally usually some enhancements will also be present.

Append

In addition to the normal function of appending one file to another, with this command a device may be appended to a file spec. Thus, for instance, characters inputted from the keyboard may be appended directly to a file on a drive.

Attrib

Existing command.

Auto

Existing command. It may be defeated on power up with the Enter key.

Boot

This command causes the disk in drive 0 to be booted into the System. It has the same effect as the reset push button switch on the back of the keyboard or a power up position. All devices will be returned to their normal power up configuration as if the System has been turned off and then turned on again. The single key stroke commands mentioned in the introduction above are applicable. Thus typing BOOT up arrow will disable the keyboard debounce and repeat functions.

Build
This command allows the user to build a file of desired commands and save this file under any valid file spec. BUILD is available mainly to build ASCII files for use with the DO, KSM and PATCH features of LDOS, although it is possible to build files containing any characters from 00H to FFH with the HEX option. To put it more simply, the BUILD command will create a file which may be called by the DO command on power up. The contents of the DO file will thereupon be carried out. The HEX parameters mentioned allows the user to enter characters other than those directly available from the keyboard and as mentioned, any one byte value may be entered. This command together with the DO command is extremely powerful and is essentially an enhancement of the commands of the same name contained in the TRS-80 Model II.

Clock
Existing command.

Copy
Although an existing command there are a large number of enhancements. One of the most important is that it is not necessary to create a mirror copy of the file which is being copied. Logical record lengths may be changed as may be the directory entries. The parameter CLONE may be used to create an exact duplicate of the directory entry of the original file. In addition, COPY may be used from device and from device to file spec. If CLONE is not called, then COPY will allocate the current data to the copy. This feature is important in that the date upon which the last operation was carried out on a file is always available to the user. Hence one is never in doubt as to the last occasion upon which a file was updated. Copying from device to device is really self-explanatory. The command such as COPY *KI TO *PR for instance will cause the computer to direct all keyboard input to the printer. File spec to device or device to file spec also is self-explanatory. COPY *KI TO KEYIN/NOW:0 will send all keyboard entries to the disk where they would be stored in a file called KEYIN/NOW. In the reverse, COPY ASCII/TXT:0 TO *PR would copy the contents of the file ASCII/TXT to the line printer.

Create
Like the BUILD and DO commands, CREATE is very similar to the command of the same name in the Model II TRSDOS and allows the creation of a file of a type and size stipulated by the user. The three parameters allowed are to set the logical record length, to set the number of records to be allocated to the file and, finally, the amount of space in 1K blocks that the file is able to hold. There are a number of advantages in pre-creating a file. Probably the most important is that the resulting files will be as compact as possible on the disks. In other words, will have as few extents as possible. The result of this is that the drive head is not nipping all over the disk when reading and hence a faster read and write is obtained.

Date
Existing command. On power up the user is asked to enter the date in the format of MM/DD/YY. This is then converted to the full date which is displayed on the screen. Hence 04/04/81 will result in the slogan "SAT,APR 4, 1981" and this may, of course, be used in Basic programs or in LDOS. A rather nice feature (as compared to the Model II) is that the date, only has to be entered at power up. Hitting the Reset or using the BOOT command will leave the date untouched. As previously mentioned the date is used by the System when creating files, making backups and formatting disks. If the date is not set (and it may be avoided by simply hitting the Enter key) the update date will not be filed. In other words the "last - written - to" date will not be updated.

Debug
Existing command.

Device
This command will display details of all logical devices which are used and the devices and files to which they are currently pointing and/or attached to. It will also "log" the diskettes currently in the available disk drive by updating the Device Table to show the number of sides, the density, and the location of the directory track. The data displayed so far as the drives are concerned are the type (5", 8" floppy, hard) the number of tracks, whether or not it is single or double density, single or double sided, the stepping rate of the drive and the delay of the drive. DEVICE is not an operational command, it merely gives you information. It is, however, useful in the sense of checking drives. For instance, should garbage be returned by the command, it will indicate that the Drive Code Table on the disk is incorrect.

DIR
Obviously an existing command, but one that has been considerably enhanced. In addition to the normal A, I, S switches two additional ones are added. One to enable the directory to be printed out automatically and one to permit non-stop display (scrolling) of the directory information. It will be understood that any disk operating system which supports both 5" and 8" floppies together with hard drives, as well as double density and double sided disks must have a comprehensive directory command. The obvious reason is that there are far more files on 8" floppies than there are on a 5" and even more on a hard. The Directory command in LDOS therefore has many options and switches which are available to control the directory output. The manual, for instance, devotes no less than 7 pages to this command. Unlike previous DOSs, the simple command DIR will not just access the disk on drive 0. It is used as a global directory command and each copy of the drive's directory will be displayed. It is obviously beyond this description to go into the command completely. Two probably insignificant points appeal. Firstly, as in the Model II, the free space on the disk is displayed with the directory. Secondly, a "+" may appear after some file names. This will indicate that the file name marked has been written to since it was last backed up.

Do
Also see BUILD. The command executes a file created by JCL.

Dump
Existing command. Used, of course, to DUMP a specified block of memory to a disk file. Important enhancements are that the DUMP may be in load module or ASCII format. Also an optional end of text marker may be specified. Thus word processor files such as Scripsit or Pencil may be manipulated.

Filter
This command establishes a filter for a specified input/output path. It is used to set up an input/outut path through a filter routine contained in the specified program. Any data needed by the program may be passed by the optional parameters. A Filter program can provide many useful functions during input/output process. Lines and/or characters can be counted with certain actions taking place when preset limits are reached. Character conversions could be performed such as changing each linefeed to a null. Filter programs may be provided by the user but will require knowledge of a Z80 Assembler. A complete description of Filter routines and how they are written is contained in the technical section of the manual where several actual Filter programs are shown and described. Two prewritten Filter routines are provided in LDOS. The first is concerned with the printer and limits, or filters, the output to 80 characters per line. Any sinlge line which is greater than 80 characters in length will wraparound and will be indented six spaces on the next line. The other prewritten Filter program is concerned with the use of the Key Stroke Multiply feature.

Free
Existing command. Because of the number of different disk drives that can be used with LDOS, the maximum capacity of the disk is shown in addition to the free space. Also the maximum number of files available is shown in addition to the number of free files available.

Kill
Existing command.

Lib
Existing command.

Link
This command is used to link together two original devices. They may be unlinked with the Reset command.

List
Although an existing command, it has been considerably enhanced and the parameters available are: to set line numbering mode for ASCII text; to set hexadecimal output format; to set type expansion for ASCII text; to direct the output to the line printer; to

choose a line in a text file where ASCII LIST is to begin; to set a record number in a file where HEX LIST is to begin; to set a logical record length to be used to display a file when in the HEX mode.

Load

Existing command.

Memory

This DOS command allows you to reserve a portion of memory, see the current High Memory allocation, modify a memory address or, finally, to jump a specified memory location. Thus, merely typing MEMORY will display the current High Memory address, whereas typing MEMORY (HIGH = X'E000') would set the High Memory location to hexadecimal location to E000. Typing MEMORY (ADD = X'4049') will display the contents of memory at address 4049. The display format of this example would be to give the user four items of information, the first being the address specified in hex, the second the decimal equivalent thereof, the third is the contents of the address and, finally, the current High Memory address is given.

Prot

Existing command. Two important enhancements are available with this command. The first special function is to correct the Hash Index Table allowing the directory to be readable from both LDOS and Basic and the second will correct the number of active tracks on the diskette to properly reflect any number over 35. The two functions may be used to attempt to make non-LDOS diskettes compatible with LDOS without making them unreadable by the System on which they are created.

Purge

This is essentially the same command as is available on the Model II and allows the user to carry out multiple kills of disk files without the need to specify the individual file specs. A feature of LDOS not hitherto mentioned, namely PARTSPEC may be used with this command. PARTSPEC is used in lieu of a normal file spec and may be composed of any combination of the normal four fields defining a file spec. Wild cards are also supported. Thus $$$WAGES will reference JIMWAGES as well as BOBWAGES, etc. Reverting to the PURGE command, a number of switches are available. For instance, the machine can be commanded to question whether or not a kill is required before it is carried out. The command PURGE/BAS:1 would PURGE all files on drive 1 with the extension BAS. The command PURGE:0 which the manual states as a ''powerful and dangerous command'' will PURGE all files including System files from drive 0. In other words, if you use this command you would finish up with a blank formatted disk — a convenient way to clean a disk, but certainly dangerous!

Rename

Existing command.

Reset

This has been mentioned elsewhere and resets the system. When the command RESET alone is entered, all active devices will be Reset. A parameter may be added, however, so that only specified devices will Reset.

Route

This command will re-route all input/output for a specified logical device to another logical device, to a disk file or to a bit-bucket. The latter is computerese for nothing. In other words, any input sent to a device routed to the bit-bucket will simply be ignored and have no output. As with all commands connected with the Device Independence feature of LDOS, ROUTE may be used from a device to a device or from a device to a file spec. Any time that a device is routed to a file spec a File Control Block and a blocking buffer will be allocated in High Memory. If the designated file spec already exists, then the data routed to that file will be appended to the end of the existing file. To write from the beginning of a file, it must first be killed. A new logical device may be created with the ROUTE command and an FCB will be created.

Run

Not to be confused with the Basic command of the same name, RUN is a new command and is used to load and then RUN a machine language application program.

Set

The SET command will set a logical device to a driver program. It does this by loading the specified driver into High Memory (The High Memory marker is lowered to protect it). Once a device is set, any input or output to or from it will be controlled by the Driver routine. LDOS allows the passing of parameters to the Driver program and these are totally independent of the SET command. They are determined solely by the needs of the Driver program. The device Driver program supplied with LDOS will be mentioned later.

Spool

The SPOOL command initiates a spooler function. For details of spooling please see page of the catalogue. The amount of memory to be used by the Spooler buffer may be defined by the user as may be the memory block to be used.

System

The SYSTEM command is an extremely powerful one by which the System may be entirely reconfigured. Amongst many other things, it can be set or change the disk drive configuration, turn on or off various keyboard drivers as well as video and hardware drivers. Thirteen parameters or special commands are available under SYSTEM. Obviously we can only discuss them very briefly herein. It is important to note that most of the following parameters may be used together in the same command line.

Fast/Slow

These commands are used only if a suitable clock speed up modification has been installed in the TRS-80 keyboard. Lobo says in the manual that they are neither endorse nor condemn speed up kits, but effort has been made to support this modification in LDOS.

Alive

This is an interesting one. It displays a moving graphic character in the upper righthand corner of the screen when the task processor (presumably the CPU) is running.

Basic2

Basic2 takes you to Level II ROM — in other words, the MEMORYSIZE? (or MEMSIZE? if you have the new ROM) state.

Break

Enables or disables the Break key.

Blink

Enables or disables a blinking cursor. Furthermore, the cursor can be in any displayable ASCII character value. For instance, if the parameter is typed in as Blink = 42, the cursor will become a blinking asterisk (if you will pardon the phrase!) As funny as it sounds, it is a rather powerful parameter because it means that any character displayable on the screen can be made into a cursor.

Blink,Large

Blink, Large automatically goes to a large blinking cursor — character 143 — and automatically enables the command.

Blink, Small

Blink, Small. The opposite displays character 136.

Drive = d

This command sets certain parameters for the disk drives. The valid parameters for 5" drives are the delay on and off. The delay is the time allowed between drive start up and the first attempted read of the diskette in that drive. OFF sets this delay to ½ second, ON sets it to one second. The latter, of course, is the normal delay time for 5" drives. The DISABLE parameter is a particularly useful one and will effectively remove the drive from the cable. If, for instance, drive 1 is disabled, then any attempt to access it will result in an error message. When you have important disks in place, this can be very useful. The reverse, of course, is to enable. The final parameter is to set the stepping rate of the drive number and it is available for either 8" or 5" drives. Stepping rate for 5" drives may be varied between 6 and 40 ms, for 8" drives between 3 and 30 ms.

Drive = d, Driver

This is the command that is used to configure the System when the hardware enables the 8" and hard disk usage. The Lobo expansion interface and others allow such usage and this program will notify the System what capacity is available on each drive.

JKL, Graphic
The JKL part of this function will be familiar to Newdos users. When enabled, pressing the J, K and the L keys together will send the contents of the screen automatically to the line printer. The graphic part informs LDOS that your line printer has the capability to reproduce the TRS-80 graphics characters during the screen print. If this parameter is selected, any graphic characters on the screen will be sent to the line printer during a JKL command.

Lower
Enables the lower case driver.

Type
This is similar to the type-ahead function in the TRS-80 Model II, but in that machine type-ahead cannot be switched off. With LDOS it may enabled or disabled. The purpose of type-ahead is that when enabled all keyboard entries are accepted and stored until needed, even if the System is executing an existing command. You are, therefore, actually entering key strokes whilst the System is processing. To give a simple example, if you are very familiar with a program and you know the questions that the computer is going to ask, you can type the key stroke answers in all at one time. Key strokes thus entered may be cleared.

Sysgen
Creates or deletes a configuration file by which the System configuration is set.

Update
This parameter will extend the date function of the real time clock as follows: — at midnight the date will advance one day, the day of the week will be updated and the day of the year will be updated.

Time
Existing command.

Trace
Existing command.

Verify
Existing command.

XFER
This command exists primarily for the single disk system user. Its function is similar to COPY except that XFER will transfer a file from one diskette to another **without** requiring an LDOS system to be present on **either** of the two diskettes.

UTILITIES
In addition to the Library commands, LDOS contains a number of utilities as follows: —

Backup
In essence, this is a normal Backup utility, but it contains a number of enhancements which are too numerous to describe herein. Very generally, the Backup command utilises three different types of backups, namely mirror image backup, backup by class and backup reconstruct. The first may only be done between drives with matching configurations of sides and density. Backup by class is self-explanatory and backups between drives of different configurations will cause a backup reconstruct to be invoked. To further explain:

1. A mirror image backup will do a track for track copy from the source to destination disks. All tracks including the directory and boot tracks will be moved. When this backup is finished, the destination disk will be an exact duplicate of the source disk.
2. The backup by class or reconstruct is actually a mass copy function. The data to be moved will be copied one file at a time. Files existing on the destination disk, but not on the source disk will **remain untouched** by these backups. When these backups are finished the destination disk will contain the same files as the source disk plus any other files that existed on the destination before the backup. The directory and boot files are not copied from the source to the destination disk.

Command File
The LDOS Command File utility is a general purpose disk-to-disk, tape-to-tape and disk-to-tape, machine language program that has been designed to provide the capability of appending two or more machine language modules (CMD, CIM, OBJ files) or SYSTEM tape files, that is to say tape programs that can be loaded with the Basic SYSTEM command. To a large extent, this utility is an extension of LMOFFSET in Newdos, but the extension is so great that this utility really bears little resemblance to LMOFFSET. It is an important utility, the instructions for it cover some eight pages of the manual. We will briefly try to summarise the functions as follows: —

1. Append two or more command disk files or System cassette tape files into one file. This is extremely useful in concatenating two or more blocks of code.
2. Offset a tape or disk file so that it loads into a region other than the original program. A driver routine may be optionally appended to move it back to its original loading routine.
3. Machine language programs from either tape or disk can be appended with patched code to correct errors. This operation, however, requires the use of an Editor/Assembler.
4. Command files can be copied from one system diskette to another on a single drive system.
5. System cassette tape files can be created from blocks of memory. Up until now this feature has only been possible via direct assembly from the Editor/Assembler or a Monitor.
6. The load address range of disk command files may be displayed.

Format
Once again LDOS takes a normal utility and enhances it almost out of recognition and also once again the features are so extensive that we cannot describe them all herein. Probably the one of most interest will be the ability to format to a non standard format. If this option is chosen then the user will be able to define the density, number of sides, number of tracks and the stepping rate.

LCOMM
LCOMM is a sophisticated utility which provides communication capabilities between two TRS-80 systems, between a TRS-80 and a Bulletin Board System (such as Forum-80) or between a TRS-80 and a large time sharing system such as (in the U.S.) Source and Micronet. LCOMM also provides capabilities of keyboard send/receive, automatic spooling and the transfer of files from System to System, **without** the need for hand-shaking when operating at 300 baud. Once again the utility is far more complex than we can describe. It appears to provide all facilities that one could possibly need for computer communication.

Patch
This utility is almost identical to the one in the Model II, with one important addition, the parameter YANK, the effect of which is to remove a patch. The purpose of Patch is to make minor changes or repairs to existing programs or datafiles. In other words, one file is patched with the contents of another.

RS-232
A collection of driver programs used to configure the RS-232 serial devices in the Radio Shack and Lobo expansion interfaces.

JCL
The Job Control Language (JCL) is one of the most powerful features of LDOS. Essentially what JCL does is to allow the user to compile to pre-defined sequences all commands or other key strokes including LDOS commands, user program commands and program query responses into a file. In other words, the user tells the machine what it wants to do at runtime including the posing and answering of questions. The computer will then automatically execute the sequences with no further intervention by the user. It is, in some respects, similar to the COMPROC program described on page 5 of the catalogue although this is a vast understatement and over simplification. Indeed, JCL can be so constructed as to run complete applications without operator intervention. An important feature is that all JCL capabilities which are available at the DOS level are equally available in Basic. Thus a running Basic program can initiate a JCL procedure without problems. Furthermore, when it has been executed the return will be to Basic. To clarify, therefore, the normal application for JCL is to construct a JCL file in which are the various commands, key stroke entries, etc. that you want carried out

automatically. This JCL file is then made the subject of a DO command line. Thereupon, the lines of the JCL file are examined line by line and executed as required. Note that the last letter of "JCL" stands for "Language" and JCL is just that. The method of compiling and execution of JCL takes up nineteen pages of the manual and one leaves it to the user, as we said at the beginning, to take the time to thoroughly familiarise themselves with this important feature.
Rather out of context, we should mention that a Job Log may be kept, that is to say a log is kept of commands and the time at which they were entered. This may be examined as required.

LBASIC

LBASIC is an enhancement of the Microsoft Basic and is constructed as previously described. It is called in a highly convenient manner very similar to Newdos, that is to say a single line entry with automatic execution of any Basic command. Indeed some of the functions of the enhancements are very similar to Newdos — although not the first four — so we will list them very briefly.

Random Files

In addition to the open "R" syntax, OPEN"RN" will return a "FILE ALREADY EXISTS" message if indeed the file does exist. In other words, this parameter stops LBASIC from opening an existing file. OPEN"RO" will open an existing random file. To either of these new commands, a logical record length may be added. The normal OPEN"R" function is exactly the same as previous DOSs and will assume a logical record length of 256. Similar opening options are available for sequential files and the Newdos ability of adding to sequential files without bringing all of the file into memory is also available in LDOS.

Abbreviated Commands

Single key stroke entries for AUTO, DELETE, EDIT and LIST. These are identical to Newdos as is the use of a fullstop to list the current line, a comma to edit the current line and the cursor arrows as follows: —

Up	To display the preceding Basic line.
Down	For the following Basic line.
Clear and Up arrow	Will cause LBASIC to display the first line of the program.
Clear and Down arrow	For the last line of the program.

Single Step

This new feature allows the LBASIC programmer to step through each program statement singularly with a hold after each step.

Systems Commands (CMD)

Newdos extended the use of this command from the simple usage in TRSDOS. LDOS, in turn, now extends further. The new command functions over and above Newdos + are:

CMD"O"	Turns off the Break key entry to DEBUG.
CMD"P"	Sends the current screen display to the printer.
CMD"N"	Renumbers the LBASIC program.
CMD"X"	Is a variable and line number cross-reference utility.

The latter two are similar respectively to the Newdos command RENUM and REF.

A particularly useful addition to the renumbering utility is the ability to skip error lines. Many renumbering routines will not renumber a program that has an undefined reference in it and one has to go to the trouble of inserting dummy lines. The cross-reference utility enables the cross-reference of: all variables, only the variables specified, of line numbers or only the line numbers specified.

LDOS contains, unlike almost all of the previous DOSs, an extensive section of technical information which deals, amongst other things, with the following subjects: —

Device control block, drive code table, directory records, disk input/output table, entry points, error dictionary, file control block, file formats, filters and drivers, memory map RAM storage areas, system overlays.

LDOS is completely supported by ourselves and by the authors, Logical Systems Inc. For the first year after purchase this support is availabe free. The following are subject to an annual support fee. Additionally, a quarterly newsletter is sent to all registered owners of LDOS. This software is supported as no other software for the TRS-80 or Genie has ever been supported.

Note to 1982 Catalogue Re-write

At the end of 1981 LDOS 5.1.1 became available for the Model I, the 5.1.0 always having been available for the Model III. Added features are as follows: —

LDOS — NOW 5.1 FOR THE MODEL I

The 5.1 version of LDOS is now available. Our stock has switched over completely and from the end of December, 5.1 has been shipped rather than 5.0. The 5.1 has always, of course, been the definitive version for the Model III TRS-80. Updating information is contained in the LDOS newsletter volume 1, no. 2, issued in October. The procedure is as described in that publication with the exception that the manual and disk should be sent to us and not to the United States. The new disks (yes, the system is now so big that you get two disks!) and the new manuals are despatched from the United States. The advantage of being able to send the manual and disk to us, of course, is that the user is saved the expense of air mail postage to the U.S.A. You must, however, pay the cost of shipping from the States to England, which is $20. The base price for the upgrade is $25. To the sum of these two figures, namely $45, must be added $8 for every month or part of a month that 5.0 has been owned. To recapitulate, therefore, the normal procedure if you wish to update is to send in to us your manual, your original 5.0 disk, together with a remittance calculated as described above. The exchange rate for the sake of convenience is being taken as $2 to the pound. There is some misunderstanding regarding an alternative method mentioned in the newsletter which endeavours to get round the customer being without his manual. The idea was that the disk only should be sent in and then a postcard would be sent from Logical when the shipment was ready to go to the particular customer. He would then be sent his manual. This, hopefully, would leave him without it for a shorter period. However, events have rather overtaken this proposition because Logical Systems are shipping the upgrades immediately they get word from us. Normally we are on the telephone to them once or twice a week and we pass along serial numbers and names and addresses in those conversations to save time. Anyway, the net result is that the turnaround time is extremely fast, so time would be now lost by not sending in the manual to begin with.
Having given all the details of upgrading, we would like to emphasise that this is not in any way, shape or form a mandatory upgrade. 5.1 for the Model I is an entirely different system to the 5.0 in the sense that new manuals, serial numbers and warranties are issued and as we mentioned above, two new disks. To a large extent, therefore, its purchase should be considered in the context of buying a new DOS rather than upgrading an old one. 5.0 will continue to be supported both by Logical Systems and by ourselves. The newsletter will continue to refer to it and include all relevant information. Updates as and when they are necessary will be made available by us at the old charge. It is by no means necessary, therefore, to change from 5.0 to 5.1. As hopefully everybody will know by now, LDOS is a very sophisticated system. This has the big disadvantage, from the vendors' point of view, in that it is difficult to explain all of the features in a meaningful way. We attempted to do this on pages 63-70 of the catalogue. Unfortunately nobody as yet has come up with a comparison chart or anything like that, so in order to give the differences between 5.1 and 5.0 it would be necessary to go through the whole lot again and this, of course, is not practical. We have available a pamphlet describing the 5.1 for both the Model I and the Model III and this is available free on request. We will, however, now attempt to describe some of the differences which come most immediately to mind.

LIBRARY COMMANDS

Some of the facilities and uses of the library commands have been increased and improved, but as a general overall statement the library commands remain much as they were.

UTILITIES

FORMAT AND BACKUP

Both of these utilities, of course, have been considerably changed and enhanced because the system as a whole now supports both double sided drives as well as double density. On Format, for instance, the user is asked whether he wants 1 or 2 sides plus the number of cylinders required. The boot strap stepping rate may also be selected within the range 6, 12, 20 and 30/40 m/secs.

Double density, incidentally, is called by typing PDUBL on power up. No parameters are required and it may be incorporated into the various automatic fire up functions of LDOS.

CMDFILE

This utility remains essentially the same.

CONV

This is a new utility for converting files from a Model III TRSDOS disk on to an LDOS formatted diskette. A number of switches are permitted enabling the easy conversion of files. For instance, one can call for the conversion of only either visible, invisible or System files. One can also convert files only if they do not exist on the destination disk or only if they do exist on the destination disk. The user may call for the QUERY switch so that the program asks him whether or not a conversion is required when each file is met. This utility is also relevant to Model I owners, but they will have to have double density hardware in order to use it.

HITAPE

This utility is relevant to Model III only and will permit the use of high speed (1500 baud) cassette rates in LBASIC and CMDFILE programs.

LCOMM

Basically unchanged.

LOG

Log is a program that will log in, the directory track and number of sides on a diskette. This provides a method of logging in diskette information and updating the Drive Code Table. It performs a similar function to the DEVICE library command except that it performs this function on a single drive rather than all drives. It will also provide a way to swap the drive 0 diskette for a double sided diskette.

PATCH

Essentially unchanged.

REPAIR

A utility program to update incorrect information on certain types of diskettes to make them usable by LDOS. This provides a very convenient way of updating the Data Address Mark for the directory track. It is beyond this description to go into all of the problems that have arisen with disk operating systems because of the original misunderstandings on the DAM. REPAIR will read enable DIR/SYS and check and correct the excess cylinder byte, set the grans/cylinder byte, strip the high bit from the boot sector directory track byte and finally write LDOS system information sectors on to the disk. All of this is a little technical, the principal functions are that on the Model III it is used to read a non LDOS disk. On the Model I it is a general purpose utility as it will not be necessary, usually, to repair alien disks, although non TRSDOS compatible features may be repaired.

GENERAL

It is important to note that Model I disks created under LDOS 5.0.3 are directly portable to the Model III 5.1 and vice versa. In other words, one can literally take the disks out of one machine and put them in the other.

JCL

The job control language in 5.1 is very similar to that in the 5.0.

DEVICE DRIVERS

JL

This driver enables the LDOS job log feature. The job lot will send a list of all commands and error messages along with a time stampt to a specified file or device. Certain other information such as file names moved during a backup will also be logged.

KI

The keyboard driver has been changed in various aspects. A typeahead feature is included. With the KI driver set the keyboard can produce the entire ASCII character set from 0-127.

RS-232

There are three RS-232 driversnow, one for the Model I TRS-80 interface, the second for the Lobo LX-80 interface and the third for the Model III.

DEVICE FILTERS

MINIDOS

The Minidos command is a keyboard filter that provides constant access to certain LDOS commands such as Directory, Free Space, Kill and Debug. An immediate top of form function is also provided for use with line printers. Additionally the clock may be toggled on and off and a character can be sent to the line printer. This is in the form of two hexadecimal digits and will therefore allow the user to send control characters to the line printer to switch printing modes etc. A Minidos R command is available for repeating the last issued DOS command.

BASIC

The 5.0 version of LDOS did not contain a Basic, partly for reasons of cost, but probably more importantly because of space, there simply was not room on the original disk for it. Now that Logical Systems have been compelled to go to a two disk DOS anyway, an entirely new Basic has been incorporated called LBASIC. It must be emphasised very strongly first of all that LBASIC is entirely upward compatible with Microsoft Basic, that is to say, the Basic found in the interpreter of the TRS-80 and Genie machines. LBASIC is a very powerful language and its compatibility with Microsoft Basic already mentioned makes it even more so. It is very tempting merely to describe it by saying that it includes most of the improvements which have been made to Microsoft Basic by various disk operating systems. However, a few other details no doubt will be appreciated. All of the improvements mentioned under the heading "LBASIC" on page 68 of the catalogue are, of course, included. The renumber and cross reference features have been changed and improved somewhat. An interesting new feature is the ability to protect programs with an "execute only" password. This means that the program may be run, but not loaded, listed or listed to the printer. Any attempt to break the program execution and examine it will cause it to be erased from memory. LBASIC now supports variable length files or blocked file mode, as it is otherwise known. This permits files with logical record lengths of less than one sector to be created and accessed. Any record length from 1 to 256 bytes will be allowed, even if the record length size is not evenly divisible into 256. Blocking and deblocking across sector boundaries is done, of course, automatically by LDOS. In this way user records can span across sector boundaries and thus make most efficient use of disk space. The very nice new random file controls (RN etc.) described on page 68 of the catalogue remain, as do the new sequential file controls for adding to sequential files. A completely new feature allows the LBASIC programmer to single step through each program with a hold after each step. It is used by pressing the Shift @ which will cause LBASIC to go into the normal wait state, but if whilst continuing to hold these keys down, the space bar is pressed, the next LBASIC statement will be executed, then go into another wait state and so on. This attractive feature, incidentally, is also available when listing a program. Needless to say, LDOS library commands can be called from LBASIC with the CMD command. These library commands must not, however, affect high memory. Additional CMD commands are as follows:

CMD''*''	Sends the screen display to the printer.
CMD''A''	An abnormal return to LDOS. Any active DO command will be cancelled.
CMD''B'', ''switch''	This command will enable or disable the Break key.
CMD''D''	Accesses the system debugger. A useful extension of this normal command is the adding of a switch so that the debugger may be turned on from LBASIC but not entered. The debugger is entered by pressing the Break key later.
CMD''E''	Returns the last LDOS error message in the usual way.
CMD''I'', ''dos-command''	Exits from LBASIC, passes a command to LDOS and stays there. In other words, effects an exit from LBASIC with the execution of an LDOS command and no return.
CMD''L'', filespec	Loads a Load Module Format file into memory.
CMD''N''	The renumber feature.
CMD''O''	This command must be followed by two parameters. It will sort a single dimensional string array starting at the element specified and sorting the number of elements specified.
CMD''P''	This command is followed by a variable and when executed will return the printer status to the variable specified.
CMD''R''	The Model III version of 5.1 command turns on the clock display. In the Model I it enables the interrupts feature after tape load or save. It must of course be done after every CMD''T''.
CMD''S''	Normal return to LDOS.
CMD''T''	The converse of CMD''R''.
CMD''X''	The LBASIC cross reference utility.

New LBASIC commands are as follows:

RESTORE nnnn	This command is similar to a regulate Restore command except that a line number may be specified. The data pointer will be moved to the beginning of the specified line and any subsequent READ statement will start accordingly.
RUN''filespec'', V, line number	The V parameter when added to the normal RUN command will allow the saving of all current variables and string space when running a new Basic program. A line number may be optionally given to start execution of the new program at the specified point.
RUN''filespec'', line number	The addition of a line number to the normal RUN command starts execution of the new program at the specified line number.
SET EOFn	This command allows a file to be opened in the R, RO or RN mode to have its end of file marker reset.

LDOS is now pretty well sorted out on the 5.1.3 version, which is essentially what is described above. There have only been one or two small changes. LDOS 6.0 has now been written. It is LDOS adapted to a non-ROM machine. The first utilisation was when it was licenced to Tandy, thenceforth to be known as TRSDOS 6.0 for use on the Model 4 machine. As of July 1983, it seems unlikely that Logical will ever sell a version of 6.0 direct to the user, but will rather licence it to hardware manufacturers, adapted to their particular machines.

IMPAKT — THE COMPLETE PROGRAMMER'S AID

The rather unusual title of this program has been chosen so as to have impact and to differentiate it from the less extensive ''tool kit'' type of program. The suite is made up of four broad categories of utilities. In the aggregate they comprise a complete utility containing every foreseeable feature that a Basic programmer could require. It is written by Nigel Dibben in his usual efficient way and some indication of the complexity and completeness of the program is given by the fact that even Nigel has been working on it for some months! Up until now, very useful utilities have been sold by us separately and, of course, we will continue to do so, but for some time it has become obvious that there is a market for a program that does everything. The original idea for the compression section came from software which has been written for the Model II which is featured elsewhere in this catalogue as ''Skrunch'' and ''Compress''. So that customers who own utilities at the moment do not have to duplicate more than is absolutely necessary, this suite is being sold in three versions. The first contains the Compression and General Purpose sections (IMPAKT 1). The second contains the Debug, Edit and General Purpose sections (IMPAKT 2) and finally, the composite program (IMPAKT) contains them all. The disk version contains all three programs. We will deal with these sections separately as follows:

COMPRESSION

Remove Remarks

Any or all of the following may be done.

- Remove all statements in a Basic program starting with REM.
- Remove all statements starting with an apostrophe.
- Remove all statements starting with REM #. This is a special mark used in the renumbering routine of Impakt.

Remove Surplus Characters

Either or all of the following functions may be carried out.

- Remove all blanks, tabs and line feeds in program statements, but not those in any strings or data statements.
- Reomve all redundant colons.
- Remove blanks in data statements.
- Remove all redundant GOTO's after THEN.
- Remove all LET statements.
- Remove all quotation marks at the end of lines, except in certain circumstances.
- Remove all characters after the second in a variable name — thus WAGES becomes WA.

Pack the Program

Any or all of the following functions may be carried out.

- Pack lines together so that each line in its expanded form will occupy no more than 240 characters. Lines will only be packed if they remain syntactically correct. The effect of this, of course, is to join what were single lines into multi-statement lines.
- Pack lines into a dense format with no more than 240 bytes per line, but when expanded the line may well be longer than 240 characters. This, incidentally, results in a completely uneditable line.
- As (a) but with user definition of the number of bytes to be packed.
- Unpack the text.

DEBUG

Trace

The following functions may be carried out.

Activate a Trace function with continuous display of the last 8 lines operated upon **at the top of the screen.** This does not use the normal TRON feature of the Tandy Basic whereby the screen is effectively erased by the line numbers being displayed. The numbers are shown at the top of the screen.
Remove the Trace function.
Activate the Trace with a line by line automatic pause.
Activate the Trace with a step by step pause.
Leave the Trace active, but suspend the display. The line number record will be kept up to date and can be inspected.
Disable the Impakt Trace function, but enable the Tandy TRON. This makes an interesting comparison.

A number of control options are available whilst a Trace is proceeding, the effect of which is essentially the ability to switch from one control mode to another.

A number of pause options are available during the Trace so that during the pause, the user may pause and:

Display the current line.
Display the current step.
Switch on or off the option to have the current step displayed at all times.
Enter Edit mode automatically in the current line.
Abort the program.
Clear the screen.
Enter a breakpoint sequence.
Breakpoints may be inserted in the program so that when the Trace reaches them, it stops and all variables etc. are then available for inspection.

View Data

With this function the expressions will be stored during the Trace and will be displayed on the second line of the screen so that the values contained in the expressions may be inspected.

EDITING

Abbreviation Mode and Special Key Functions

The following functions are available.

Sets shifted keys to preset abbreviations. In other words, a shorthand feature whereby — for instance — a shifted L will display LIST on the screen.
Disable the Abbreviation Mode.
Display the current abbreviations stored.
User define the keys. This feature is not restricted to commands and a shifted letter may be equal to any string of 15 or less characters.

Find and Count

Locate the occurrence of a parameter specified by the user. The numbers of the lines containing the occurrence are displayed with the figure in brackets showing the number of occurrences in the line if greater than one.

Find and Wait

Similar to the above but a pause is executed when the occurrence is found. A number of special commands are available including the ability to abandon the search, reset from the first line, delete line display, automatically enter the Edit mode for the line displayed and continue to search.

Find and Replace

Again, similar to the above, but when the occurrence is found, it is automatically replaced by a user defined expression.

Join Lines

With this feature any line may be appended to another line with the automatic insertion of a colon.

Line Checking

Any or all of the following features may be carried out.

Mark all reference lines with a special form of the REM statement.
Remove all marks inserted under (a).
Check all lines for referencing and display any errors.
As (c), but append two asterisks for easy search.

Copy Lines

Copy one line to another. If the line being copied into exists, it will be overwritten. The line being copied is not changed. With this feature any existing line may be duplicated in another part of the program.

Append Text

With this feature the programmer may close off the current program and enter from the keyboard or from tape or disk a new program. Thereafter the "block" may be removed so that the two programs become one.

Decode Lines

This is a useful feature which has come about by the continued use by programmers of the technique of entering graphics and machine language into packed strings. The feature will decode the strings into hexadecimal code and add them as new lines at the end of the program. A number of variations are available to this routine all of which are aimed at making the manipulation of packed strings more easy.

GENERAL PURPOSE

Disk Program Save/Load

This function is provided to enable the quick saving of backup copies of programs during editing and debugging. It is only necessary to type in a three letter command for the program to be saved under the file name TEMPROG/BAS. This feature, of course, is not available under Level II Basic.

Exit from Compak

Two exits are permitted. The first will restore all vectors and pointers intercepted by Compak to their proper states and then execute a return to Basic. The second exit is to DOS with or without a DOS command being appended. This feature is not available for Level II.

Renumber Program Lines

This is, essentially, a normal renumbering program, but it has one or two extra features. In particular the sequence of renumbering may be changed anywhere in a program. This is accomplished by a special form of REM statement being inserted beforehand. When the renumbering routine reaches this statement, the renumbering increments will be changed to a user defined value. If a line number is found containing a reference which does not exist, the old number and old line number will be displayed and two asterisks will be placed after the offending number. Line numbers marked by the programmer in a certain way will be omitted from the renumbering sequence.

Status Report

Display in decimal the space allocated to the following:

Program	Array names and values
String variables	Free space and Basic stack
Variable names and values	Total of all

Rescue

This feature will attempt to rescue a Basic program lost through an inadvertent reboot, the inadvertent use of NEW etc.

Copyright and Release Number

Displays the copyright and release number of the program.

Control Key Functions

Control keys are used throughout the program for various functions. The control keys are used to provide the following functions:

Convert from upper to lower case. If this is not set then the alpha keys will be shown as capital letters and shifted alpha keys will use the abbreviations previously mentioned. If it is set then alpha keys will be displayed as lower case and shifted alpha as capital letters assuming the hardware modification of course.

When set all display characters in the range ASCII 32 to ASCII 127 plus line feed and carriage return are copied to the printer. Screen display is not affected.

This function duplicates the control Z feature which is required in a number of programs particularly in NEWDOS Basic.

A convenience function returning ASCII values 91 - 95, which are the cursor keys and used in search options.

The programs are available for Level II or Disk Basic (should be specified) and are compatible with current Video Genies.

Note to 1982 Catalogue Re-write

Impakt is now available for the Model III. Changing it over to that machine provided the impetus to improve the program slightly. A principal change has been to make the program automatically relocate itself on execution. It loads and relocates to the top of the current available memory. Impakt is now compatible with LDOS. One or two command changes have been made, some of them cosmetic. A new command has been added to enable the easy moving of a block of Basic lines from one part of the program to another. Another new command automatically converts all text in the program which is contained in quotation marks in a string into lower case. This facility is to enable speedy conversion of upper case messages into lower case.

FAIRYTALE ADVENTURE – IN BASIC YET!

When one comes to think of it there really is no reason why an adventure should not be written in Basic. Some of the earlier ones were but they were not particularly good. However, that was before the microcomputer machine language adventures became available, which, as we all know, created something of a standard in the "industry". We elected to publish this Basic adventure because it was written with the hindsight of the machine language program and indeed, it follows the general layout of them quite closely. There are really only two objections to a Basic adventure. The first is a question of speed and the second of security, not in the sense of copying, but in the sense of being able to cheat by listing the program and looking at the strings. In this Basic Adventure, at any rate, the speed point is really pretty well overcome. It is certainly true to say that there is some delay after an instruction is entered before the computer complies, but it can only really be called a hesitancy on the computer's part. We feel that it does not seriously detract from the enjoyment of the game. The author, Mr. K. D. Campbell, has overcome the second point by disabling the Break key at the beginning of the game and enabling it at the end. Obviously, this can be overcome by a knowledgeable user, but at least it will go some way to stopping an unscrupulous player from getting a listing whilst the game is in play. Subject to the foregoing, we do not think that the game really suffers from being written in Basic and we would certainly be interested to hear our customers' views on it. The game is aimed at family participation in that its theme is fairy stories and nursery rhymes that all interconnect to provide "souvenir" treasures from the stories. Thus it is hoped that the children will be interested in the stories, whilst the parents will probably be required to provide vocabulary and perhaps "adventure experience" in solving some of the problems. The game has thirty-six locations and over thirty moveable objects. The player will have to travel through secret passages, grottos, waterfalls, caves, candy houses and many other interesting locations.

THE ELECTRIC ACCOUNTANT – FOR PERSONAL OR BUSINESS ACCOUNTS

This is a general purpose income and expenses program which may be used for VAT registered companies as well as private individuals. Essentially, the purpose of the program is to maintain datafiles of income and outgoings. This data is held on a monthly basis and these, of course, are also divided into years. Each year is assumed to run from April of one year to March of the succeeding year. Thus, assuming that the years are appropriate to the user, twelve files would be kept for 1980/81 running from April 1980 to March 1981. The data so filed may be manipulated by the user in a number of ways. The main menu for instance contains the following options:

Add new records.	Search records for data.
Change records.	Display categories.
List records.	Change month.
Print records.	Total income and expenses.

When appropriate, a further item is added to change the VAT rate which is, incidentally, stored on a month to month basis so that the VAT rate for any particular month is shown when that month is accessed. As will be apparent from the above list of options, the data is allocated by the user to one of twenty categories of expenses. These categories are defined by the user. Probably the best way to describe this program is to go through each of the main options above in turn.

Add new records

This option permits the user to add records to the file for the appropriate month. We should mention that one only gets to the menu stage after the month and year has been chosen. Hence, both the machine and the user know which month is relevant to the menu. When the 'add new records' option has been chosen the user may input either income or expenses. The machine will display the list of current categories and the user will input to whichever one he chooses. If the operator is registered for VAT then a number of additional options will be given. This program has, incidentally, been inspected by H.M. Customs & Excise and although they will give no official approval to any software, it has not been disapproved! After the category has been chosen the user is given the option to enter a sub-category. This feature is particularly useful for keeping sub-totals. For instance, under the main category of "Car" one can have a number of sub-categories for petrol, repairs, road tax etc. Thus a breakdown of total car expenses is available by sub-category and the user may find a total (for instance) of all expenses paid for petrol. Another very useful feature is that the user may enter "notes". Thus in the example we have been using the category of Car may have been split into a sub-category of repairs and one could add a note that the particular expense being entered was for a new battery. Other items of information may, of course, be substituted such as the data, or the cheque number. When the search function (to be described later) is chosen, the file may be searched for the item "new battery" and it will be found.

Change Records

This is an editing feature which enables any record to be changed as required.

List Records

This option will display records on the screen for the month in question. Either one record or all of them for that month may be shown. Additionally, all records in any category can be listed.

Print records

As above, but output is directed to the line printer.

Search records

This is one of the most useful functions of the program and allows the user to search through the notes of all records for that month for any item of information required. The program asks for the expression to be searched for in the notes and when entered it will be found if it exists. Thus, for instance, if one had entered cheque numbers in the notes, it would be necessary to enter that particular number for the program to find the appropriate entry. Duplicates will be displayed. Thus, for instance, if one had been having trouble with the brake system of a car and there were a number of notes against different items for it, then searching for "brakes" would bring them all out.

Display categories

Self explanatory. The categories are displayed on the screen.

Change month

After the user has finished with any particular month, he may use this option to change to another.

Change VAT

This allows the registered user to change the appropriate VAT rate.

Total Income and Expenses

After informing the computer whether a printout is required or not, a sub menu is displayed. We will not in this description go through each one for they are actually self explanatory. The options are as follows:-

All categories for the year.	Sub-category for a year.
All categories for a month.	Sub-category for a month.
One category for a year.	VAT total for three months.
One category for a month.	Taxable inputs and outputs for the month.

As can be seen from the above, this is a flexible accountancy system for the home or small business including an option for VAT registered owners. Accounts may be kept of all income and expenses generating a simple profit and loss account for the month or the year. To some extent it is similar to a nominal ledger. The program requires 48K and two disk drives.

PIGSKIN – THE AMERICAN SLANG FOR FOOTBALL

Let us get one point out of the way first of all. This game is concerned with the American game of football and not our far better English game of soccer! It is a football strategy game and is played on a graphic representation of the field. It contains most of the elements of the game. You can pit your wits against those of a friend, watch the computer play against itself, or play against the computer. The game and statistics are both graphically displayed and five levels of difficulty are provided when playing against the machine. A demonstration mode is featured whereby the machine strategy can be studied. A game may be saved for future use. Pigskin graphics are an essential part of the enjoyment of the game and before it actually begins, a number of statistics such as the time remaining in the quarter, 30 second clock, score board and so on will be displayed on the screen. Once play begins, the ball moves up and down the field to mark the yardage gained or lost. If you try for a goal and make it the ball will go through the uprights, when you run a play (whatever that may mean) time is taken off the game clock. Frankly, we do not know how good this program is as we have no knowledge of American football or the rules of it. It does seem fairly straightforward in play and, presumably, if one knows what one is doing, it can be enjoyed.

SHARE PORTFOLIO – A DISK SHARE MANAGEMENT PROGRAM

Elsewhere in this catalogue we described a tape orientated Share Portfolio program. Although not written by the same author, this one carries out a similar function for disk users. This Portfolio program is written by Dr. H.J. Campbell, who also wrote the Share Analysis program which follows, although they are not interactive in the true sense of the word. Although the disk contains three programs, shares, folio and sales, the latter two are included to give the new user dummy data upon which to operate so that he may get the feel of the program before actually using it. The main program is entitled Shares and when it is run the user is presented with a menu containing five choices as follows:-

1. To see present holdings
2. To make records of purchases.
3. To make records of sales.
4. To revalue present holdings.
5. To see records of buy/sell deals.

These are all pretty well self explanatory. If the first choice is made the user is given the option of either a screen display or a printout and then the data is presented in seven columns. The first indicates a buy or a sell, the second a date, the third a name of a share, the fourth the number of shares, the fifth the cost and, finally, the cost plus fees. After the shares in the portfolio have been displayed, three titles are given namely the total value, the total cost and the total fees paid. The second and third items in the menu are used when a purchase or sale is made and the entries, of course, update the datafiles. The fourth menu item is used when you wish to revalue your portfolio and it takes you through each share holding in turn, gives you the purchase price and invites you to enter the present price. The format if you choose the final menu option is similar to the first and lists your past buy or sell deals share by share. The amount of profit or loss is shown either as a positive or a negative figure. In summary this program is a rather nice, simple, straightforward share portfolio management program that gives you the essentials of what is required.

SHARE ANALYSIS – INVESTMENT ANALYSIS

Investment analysis is not easy. Even with a good calculator, long boring hours are spent in determining the necessary ''indicators'' of market action. Then graphs have to be drawn to get an extended view through time of what is going on. It is only then that the investigator can get an overall picture of which will enable him to make his decision. The purpose of this program is to allow the user to jump straight to the last step with a minimum of effort. All he is required to do is to type in certain data which the program records. It then calculates the indicators makes a ''symbolic chart'' and draws the graphs. The user may input data as frequently or infrequently as he wishes. This is kept in a datafile and is available at all times. A number of files are provided on the disk supplied. Most of them are datafiles, but the program entitled ''Analysis'' is the principal working program. The other datafiles are provided so that the raw data may be stored. This incidentally, when supplied contains demonstration data which are actual figures from the Financial Times. Another datafile contains the investment analysis indicators. These are automatically calculated and filed if new data is entered or after you have rewritten previous data. This file too, supplied, contains demonstration data. The third datafile holds a symbolic representation of the meaning of the interpretors in the terms of the probable Stock Market movements. It fills the screen with up arrows, down arrows and hyphens. The up arrows mean that those indicators show a tendency for the market to rise and, of course, the reverse for down arrows. Hyphens mean that no conclusions can be drawn from the indicators at that time. A final datafile is supplied which is a text file which gives an accountof how the data is ued to prepare the indicators and of how the indicators are used in previously marked analyses to imply market trends. It is this file that will give you the information that will enable you to examine the implications of the groups of indicators. The machine obviously requires the input of various indices such as the gilts index and the fixed index. These are obtained from whatever source you prefer. All in all a useful program which will obviously not guarantee you success on the Stock Exchange, but which should certainly be of some assistance.

MULTIPLE CHOICE QUESTIONS

This program is an extremely useful aid for the busy teacher and enables him to compile a series of multiple choice questions which can be saved to a disk file and also provides the student with the facilities to answer the paper after the teacher has written it. Various provisions are made for printing out and various other ancillary matters. The suite comprises two main programs. One is called MCQ and the other is called Question. The Question program is the one with which the teacher compiles his paper and the questions. MCQ, or anything else you may like to call it, is the actual paper. When this is run, the first display comprises some brief instructions, for instance, that you have to hit the ''T'' key for True, ''F'' for False and ''D'' for doubtful. You are also informed that a correct answer will yield the student one point, an incorrect answer loses the student one point and a doubtful answer is unmarked. Thereafter the machine asks whether the student or teacher requires a hard copy. Obviously the advantage of a hard copy is that the teacher can set a pupil to work on a file unattended. At the end he can return and have a permanent record of the pupil's performance. The next question posed is the subject required. This refers to the file name which the teacher gave to the particular subject when he made the file with the Question program. To further clarify this procedure the Question program is used by the teacher to make a file. MCQ is used by the student and the teacher so that that student can answer the questions. The file name mentioned is the actual paper set by the teacher with the Question program. When the correct subject is chosen, the program goes to the disk drive, selects the appropriate file and the question and answer session starts. The program will not accept any entries except those for True, False and Doubtful. After the questions have been answered, the machine will report on which were correct and the mark will be given for that question. Additional information given is the user's marks for all questions so far and the percentage mark. The same procedure is used for all questions. Eventually the machine will tell you that the paper is finished and the total marks and percentage will be reported. The Question

program used to manufacture the papers, starts off by asking the teacher whether or not he is making a new file or adding to a previous one. If the former is chosen then the teacher must enter a file name, which is, of course, the subject matter of the paper. The teacher is then prompted to enter the first question together with prompts for each of the five possible answers. Finally, the machine prompts for a coded correct answer. When the teacher has his entire question in front of him and confirmed to the computer that it is correct, the material is transferred to a disk file, the teacher is asked whether or not there are more questions and so he proceeds throughout the paper. When he has finished, the file is closed off and is ready to be accessed by the MCQ program.

GAMMON CHALLENGER – BACKGAMMON WITH SOUND

Elsewhere in this list is described Back-40 which we distribute for Adventure International. Gammon Challenger is written by Ray Daly and Tom Throop. It is, we understand, a formidable program and although we have not played it against Back-40, we are told that it has already beaten the Backgammon issued by Hayden Publications and Instant Software. The human player plays against the computer and the game has three levels of skill. A useful feature is that an additional "level" is available. With this option the program plays with the skill of Level I which is the highest, but before each roll of dice, the machine enquires whether the human player wants to specify the roll. This feature can be very useful in studying the game. The player has the choice of deciding who plays first. The graphics are good. The dice are represented by graphic drawings of two cubes. The screen may be redrawn if it is erased accidentally. There are a number of additional and important features as follows:-

1. The board may be saved and recalled for later use. This function, of course, has a number of applications. Not only the obvious one of running out of time during a game, but also being able to save the game and compare it with others.
2. The board may be set up by the user, amongst other things so that the computer's response to given tests may be studied.
3. Sides may be changed so that the human player plays the computer's game and vice versa.
4. The level skill may be changed during the game.

All in all a very good Backgammon. We are not skilled Backgammon players, but if we had to compare this program and Back-40 we would be inclined to say that Back-40 probably has a very slight skill advantage, but Gammon Challenger has more user functions.

PILOT – THE EDUCATIONAL INTERPRETER

Pilot is probably the foremost language used by educationalists. This version of the language is written by Alec Wood of the Wirral Pilot Group and is a complete programming system for controlling interactive text, designed to make the creation of interactive computer assisted learning programs as straightforward as possible. As well as the interpreter the system also includes extensive edit and taping facilities allowing the ordinary subject teacher, or parent, to write the sort of user friendly text which is difficult to write with a general purpose language such as Basic. The Pilot language was first developed at the University of California and has been implemented on a variety of machines and on a number of versions. The Wirral Pilot distributed by us is available for both the TRS-80 and the Video Genie customers must state which when they order) and is an extensive integer subset of the common Pilot. Pilot is not a key word language like Basic, but instead uses single or double letter commands known as op-codes. A Pilot program consists of series of instructions, one to a line. Line numbers are not used. Each instruction is built up by adding conditioners and/or modifiers to the op-codes as required. The core op-codes provided in this Pilot are:

PR:	Set options	J:	Jump
R:	Remark	U:	Use Subroutine
T:	Type Text	E:	End Subroutine/Program
A:	Accept Input	C:	Compute

Only one modifier is provided which is J. It is used with the match op-code and causes the program to jump to the next match instruction if a successful match is not found. Five conditioners are available as follows:-

Y	Execute instruction only if the last match was successful
N	Execute instruction only if the last match was not successful
n	(n is a digit from 1 to 9) Execute if n matches the answer counter, for example, first time through an accept loop instruction 1 is executed, the next time instruction 2 etc.
E	Execute if the error flag is set
C	Execute if the last relational expression conditioner was true.

The program is accompanied by a 26 page manual which is both instructional and operative in content. The Wirral Group is anxious to have their interpreter as widely used as possible and its price reflects this desire.

SPACE EYE – TAKE THE PART OF THE BADDIE!

When you come to think of it, computer programs are rather like films, the viewer or operator normally takes the part of the good guy. In this game the roles are transposed. You take the part of a Vogon space commander and your mission is to destroy Earth, the Moon, Mars or Jupiter, before the surface defences shoot you down with their missiles. So far, apart from the roles being somewhat transposed, we have an ordinary space shooting game. The importance of this game is hinted at by its title - "Space Eye", for during the play of the game, that is to say during the attack on the planet, the centre of the screen is taken up by a fantastically realistic view of the planet underneath. Obviously the topography of Earth is better known to us than that of the other planets, so it is with the Earth attack that one gets the most realism. One almost gets the actual feeling of passing over the Earth as the Continents pass below the Space Eye. The impression is quite uncanny and really has to be seen to be appreciated. The graphics for the various planets are so extensive that they cannot be included in the program and are supplied in the form of datafiles which the program inputs. In other words, when you have chosen the planet which you wish to attack, the data for that particular planet is fed in from either tape or disk. Here and there on the planet's surface are enemy bases which have to be destroyed. Intermingled with them are the enemy's rocket sites which will, with uncanny accuracy, damage your vessel with their missiles. Although this shooting back and forth is good fun, the value of the program lays in the realism of the image of Earth passing beneath the Space Eye. As we are not so familiar with the other planets, the view passing beneath the Space Eye has been annotated with the names of the most important features and in the case of Jupiter and Mars, some of the Moons are displayed. During an attack the surface of the planet passes beneath the Space Eye as we have described, but an added feature is that the user has the option of displaying on the screen the planet over which he is orbiting. This can come in handy if you are not used to orbiting around Mars and Jupiter! Tape and disk versions are available.

PELMANISM – A COMPUTER VERSION OF THE CARD GAME

Essentially the object of the card game Pelmanism is for the player to remember the position of cards so that when a subsequent card is turned over he may match it. This computer version is a very good simulation of the original and essentially amounts to the same thing. When first started, the program displays the cards on the screen with the matter sides down. The player or players select cards from various positions which are displayed and the player must remember what they are. They are then covered up by the computer and another turn is taken. When the player thinks he can remember a match with a current turned up card, he calls for it and sees whether or not he is correct. The player with the most pairs at the end wins. Pelmanism is a simple game to play and is equally simple to describe. It is good fun, perhaps better for the younger members of the family, although an element of gambling may, of course, be introduced to make it more interesting for the adults!

TAROT – A NEW INTERESTING VERSION

We have previously stocked a Tarot. It was an early program and, to some extent, left things to be desired. On page 29 is described Yi-Ching, written by a Priest of Isis. Unlike some other programs, Yi-Ching was written in a serious vein as part of the work of the Centre of Maat. The same author has now written an entirely new Tarot which is being substituted for the old one. There are a great number of improvements. Indeed, we feel that it is not misleading anybody if we say that the previous version was in most senses a game, whereas this is a serious interpretation of the subject. An indication of the thought that has gone into the program is that when we suggested to the author that the cards should be dealt onto the table a little faster than in the preliminary version, we were told, in no uncertain terms, that the speed in the program was essentially the same speed as used by a person physically laying cards on the table and it should stay as it is! The program has been written so that it will be useful for both the person who considers Tarot as a "fortune telling game" and those, like the author, who work in the field and use it as a substitute for a pack of cards, any time and anywhere that they have a TRS-80 or a Video-Genie. The program has been used frequently to lay a reading for people who are not present or who wish an example reading and it has, so the author tells us, performed with a great deal of success. Part of the purpose of the program is to educate those who wish to learn the interpretation side of Tarot. A full course would apparently require 30 or 40 megabytes, but this 16K is a happy compromise. The layouts used are those which are used professionally and the Tarot cards and interpretations are based upon the Tarot of the Golden Chakra, which is a brother Centre to the Centre of Maat. Unlike the pure game versions of Tarot, no question is answered by the cards. The reason for this is two-fold. Firstly, that a general reading is given taking into consideration all aspects of a person rather than centering on just one and secondly, (bearing in mind that the author considers this a serious program) there are a number of subjects which the user should not be permitted to ask about, for instance, the subject of health. If as the author believes a person using the program should treat it with seriousness, a question about his health could cause worry and even harm to the questionner.

July Listing

ASTEROIDS – A FUN ARCADE GAME

For some considerable time now the game of Invaders has ruled the arcade games market and it is probably the most popular game that we have ever sold. Now, however, we are going to market with Asteroids, which, like Invaders, stemmed originally from the arcades. For those of you not familiar with the game, the idea is that you take the place of a space ship which encounters showers of asteroids. You have to dodge them and annihilate them with you ray guns. The problem is every time you hit one with your laser beam it splits up into a number of others, all of which are potentially fatal to your craft. When an asteroid hits you the craft is destroyed and one life is taken from your score. This particular version has a number of enhancements. As normal, you can rotate the ship around its axis so as to fire in different directions. You can also supply thrust to your space ship so that it moves forward. An additional feature of this game is the provision of hyperspace movement. This causes a move of the space ship to a random position which, of course, is very disconcerting for the asteroids. Score is 100 points for a small asteroid, 50 for a medium size, and 20 for a large. This seemingly illogical rate is, of course, due to the fact that a smaller asteroid is harder to hit than a bigger one. In addition to the asteroids, some fast moving alien ships will cross your path from time to time. These are pretty murderous beasts because they are firing off rays in all directions and, of course, if they hit your ship then you lose a life. One of the great advantages (as with our version of Invaders) in this version of Asteroids over others that we have seen, is that the game parameters can be changed. The player has control over the speed of the game, the initial number of asteroids, the increase in asteroids per frame and the starting number of lives that the player has. The program is written in machine code, of course, is fast moving and enjoyable. Personally we prefer it to Invaders, but everybody to his own taste. Very nice sound effects are included in the program. Available on tape and disk.

SHUTTLE – A COMPUTER MODEL OF THE COLUMBIA FLIGHT

This program is a simulation of the recent successful shuttle flight of the space vehicle Columbia. The entire flight is covered, proceeding from the initial countdown, through the launch, and into orbit. From there you may drop out of orbit, fly the shuttle through the atmosphere, to a safe landing. You will, however, need a lot of skill to do it! The program is for a single user, although, as there is a time factor displayed in the program, one could compete against another player to see who gets the best time, but generally speaking, it is intended for a single user. An extremely important feature is that the flight can be started at three points, that is to say, you can elect to start the simulation at the countdown, or whilst the shuttle is in a stable orbit around the earth, or shortly before landing back onto the earth. This program is, to some extent, similar to Astro Navigator (page 56 of the catalogue) which has proved to be extremely popular. The very few unflattering comments that we have had about the program were all to the effect that it was very complex. The feature of being able to start in three places in the flight means, we feel, that the Shuttle will be less complex than Astro Navigator, and will mean that the inexperienced user can start halfway along the track and thus, perhaps, be a little less frustrated! The simulation of the flight is an accurate one. Actual fact has only been changed at one or two points in the program. In particular, for instance, the solid fuel rockets have had their capacity increased from 26 million Newtons to 36 million Newtons (26 hundred to 36 hundred tons) so as to allow a little more leeway on take off. Obviously, throughout the flight the player guides the shuttle and, in order to do this, he has a number of different controls, the most important is the ability to vary the shuttle motors' thrust on a scale from 0-9. 0 will shut the motors off and 9 gives full thrust. In addition to the thrust control, the craft may be rotated vetically upwards and vertically downwards. A further control stops this rotation. Two other controls permit rotation in fine increments of approximately one third of a degree, and yet another sets rotation to coarse resulting in about five degrees. Columbia starts its flight, of course, pointed vertically into the sky, sitting on its end, and tethered to a launch tower. It carries a huge fuel tank to provide the fuel for its own three main engines in addition to large solid fuel rockets which provide the major thrust at lift off. Two minutes into the flight the rockets are jettisoned automatically as they are then empty. The computer, of course, advises the player on jettisonning, but in any event it is pretty obvious because the acceleration increases as the mass of the vehicle has got less. The countdown for the launch starts at T= −20 seconds. At T= −10 the shuttle motors start firing and the computer will set them on their lowest settings. The shuttle remains tethered until T = 0 when the solid fuel rockets ignite and lift off takes place. The player must now, as pilot of the shuttle, get the vehicle into its orbit with his controls. During the first flight of Columbia (in actual fact) a stable orbit was achieved at a height of about 55 miles (98,000 yards) and at a speed of about 18,000 miles per hour. It is at this target, therefore, that the pilot must aim. Incidentally, the program supports either Metric or Imperial measurements at the election of the user. Heights are given in yards if the Imperial option is selected as this is more convenient for the final landing. To achieve a stable orbit the pilot must rotate the vehicle downwards soon after take off to allow the horizontal speed to build up at the expense of the vertical speed. Although the instructions contain some general hints, it will be experience that will guide the pilot into a successful flight. Essentially three factors have to be adjusted to get into a stable orbit, namely the height, the horizontal speed and the vertical speed. Skilful use of the orbiter motor in conjunction with the attitude controls will achieve this result. Once in orbit, the pilot will probably wish to jettison his fuel tanks which he can do, and the computer will confirm that the tanks have gone. All of the fuel and mass values will be automatically changed to reflect the new situation. Assuming that the pilot has set up a stable orbit, he can continue to go round the earth for as long as he wants. Having got there, it might be a convenient time to break off for a cup of tea! In any event, when he is ready to leave orbit, the craft must be rotated to face backwards and the motors given a short burn. This is done, not with the main engines (because the fuel tank will have been jettisoned), but with the Orbital Manouevring Engines. These are activated by a control in the craft. These engines only have two thrust conditions, "on" and "off". The motor is set to burn only for a total period of 155 seconds. You are told how much time is left. The computer simulation or model includes a full atmosphere with a density that closely follows that of the real atmosphere. As the density steadily and rapidly increases below about

55,000 yards, the craft begins to experience both lift and drag similar to an ordinary aeroplane. The drag starts to slow it down, whilst the lift allows the craft to start to fly. This is a very tricky part of the flight as several things can go wrong. If the shuttle is too "nose up", it can experience enough lift to shoot back into space. Alternatively, if the opposite occurs, the G-force will rise above tolerable values making the pilot unconscious and then, if allowed to continue to a level of 10 G's, the craft itself will disintegrate. These cheerful remarks, incidentally, apply throughout the flight. The whole secret is to lose speed and height in a controlled manner. Apart from the attitude controls, the lift and drag can be controlled by setting an air brake on or off and by setting flaps for extra lift. Both of these controls must be used carefully as again you can build up too many G's and also the flaps can be torn off at high speed. These, incidentally, are probably a departure from actual fact. It is not known whether the actual Columbia had flaps, but in any event they are an aid to landing so were included in this simulation. The Columbia lands at a speed of about 200 miles per hour. Before landing, you will have to lower the undercarriage, which, of course, will increase the drag. The landing "window" is a speed of 200 to 220 miles per hour and a descent of −20 to 0 miles per hour. The Columbia, that is to say the actual Columbia, flew apparently rather like a brick. In other words, it was a very poor aircraft in the true sense of the word and difficult to land. This simulation is similar, but a successful landing can be achieved. As we keep on emphasising, this simulation has kept as close to the original as possible and it is so in this respect. The original Columbia pilots did a tremendous amount of practice with the landing phase. When you can land this simulation safely you are getting good, which again is the same as the original!
This is one of the best simulations that we have seen. It combines the control of the space vehicle with that of an aircraft and gives the user the best of both worlds. It is not a graphic game. The joy of its use is in landing a full flight successfully. It is available on tape and disk.

Note to 1983 Catalogue Re-write

Apart from some new display features, there are three principal improvements. The first is rather out of reality, but does add additional interest when one is orbiting the earth with little else to do. An orbiting satellite has been included so that when in orbit the player can use it as a target for orbital rendezvous exercises. The second new feature is that the program now stores the position of the home base of the Columbia and is able to track the Shuttle relative to that base. In other words, one can aim to land there rather than simply anywhere on the surface of the earth. This, of course, is more realistic in that the real Columbia has always had a specific landing spot. The final improvement, hopefully, does not add realism to the real Shuttle, but certainly adds interest to the simulation because, on a ratio of 1 in 5, the player will experience an engine malfunction during or shortly after the blast-off period. How he copes with this, no doubt, will sort the men from the boys! Shuttle always has been an extremely good program; these changes make it into a first-class one.

KING ARTHUR — A FAIRLY SHORT HISTORICAL SIMULATION

Dr. R. Bodley-Scott will be known to many of our customers as the author of two very popular historical simulations — Emperor and Hannibal. Dr. Scott has now moved on in history somewhat and his present program is concerned with the reign of King Arthur who probably lived in the late fifth or early sixth century A.D. In addition to changing his period, Dr. Scott has also written King Arthur so that, unlike the previous programs, it can be completed in a comparatively short sitting. Normally it will take between twenty minutes and half an hour to play a game. King Arthur led the Celtic Britons against the invading Angles, Saxons and Jutes, who had been arriving in their longships from the continent and gradually taking over eastern Britain since the Romans left at the beginning of the fifth century. It has been suggested that he formed a striking force of heavy cavalry which were the prototypes of the legendary "Knights of the Round Table". This shock force gave him a decisive advantage over the Anglo-Saxons who fought entirely on foot. Over a period of years he conducted a series of campaigns all over the country, pushing back the Anglo-Saxons on all fronts and it is with these campaigns that the game or simulation is concerned. As with Emperor and Hannibal, a map is displayed on the screen. In this case, of course, it shows Britain as it was at the beginning of the sixth century A.D. In the East the land has been over-run by Angles, Saxons and Jutes, but the old Roman cities of Londinium (London), Glevum (Gloucester) and Ratae (Leicester) were still under British control, but they were under a constant threat of enemy raids and many of the citizens had fled westwards. It was in the West that the true strength of Britain lay. To the right of the map on the screen is a status report listing the provinces currently under British control. The name of each province is followed by the number of British and Saxon troops present. Spies can be sent out to scout enemy territory and each year the War-Host musters at a place of the High King's choice. Contingents are sent out from the British Kingdoms, but in the Winter the men of the War-Host disperse to their homes. There are two campaigning moves each year, Spring and Autumn, and battle takes place after each campaigning move, whenever Britons meet Anglo-Saxons in the same province. In early Spring of each year Anglo-Saxon reinforcements arrive, but ravaging the Anglo-Saxon lands will discourage such reinforcements. The ultimate aim of the game is to prevent further encroachment on British territory by the Anglo-Saxons. The game lasts for a period of 10 years and the players' performance is assessed at the end of that time.

HOROLOG — A FULL HOROSCOPE PROGRAM FOR ASTROLOGERS [AND OTHERS]

This program is written by Mr. Woodruff who wrote the Astrolog program described on page 19 of the catalogue. That program was a high precision one for calculating the various parameters and information necessary to the astrologer. Horolog is a different type of program in that it is intended not only for the serious astrologer, but also for the layman who wishes to cast a horoscope. Indeed it is so constructed because it comes in two parts. The first part is concerned with the various necessary calculations and the second with the interpretation of these computations. A rather unique feature of the program is that the data from the first program is stored in unused RAM whilst the second program is loaded. Horolog will calculate a horoscope for any person with a birthday from January 1st, 1900 to December 31st, 1999 and for a birthplace at any point in the world. Either Zenith equal house or Placidus methods may be selected. Accuracy is as follows: —

SUN	1 min
MOON	3 min
PLANETS TO JUPITER	15 min
OTHER PLANETS EXCEPT PLUTO	20 min
PLUTO	1 deg
ASC, NODE, MH	1 min
PF	2 min

(All measurements + / −)

The Nodes are based on the Mean Lunar Node. The Pars Fortuna is the same distance from the ascendant as the moon is from the Sun. Generally speaking, accuracy will be closer than the tolerances shown suggest. There are, however, cases when declination is shifting rapidly and these must be allowed for as they can introduce errors of greater than usual magnitude. Although professional astrologers may consider that greater accuracy is desirable, it is felt that the program will meet most needs. It must be remembered, for instance, that the exact time of birth is seldom known to sufficient accuracy to justify higher precision. It is difficult to say how serious the interpretations of the program are. Certainly the calculations within the tolerances mentioned are very serious. The second program, however, which does the actual interpretation, may, at the election of the user, either be considered as a sophisticated parlour game or as a serious attempt to interpret the user's data. The author thinks that the interpretation of the astrological data required for a horoscope requires, to say the least, nice judgement in weighing factors against each other to give you a large percentage of intuition. Obviously, such a field is one in which humans are better than machines. Nonetheless, the interpretation section of Horolog can produce some fascinating results. It is, for instance, interesting to know that the number of distinct interpretations it can generate is more than a thousand times the present world population!

GENCOP – SYSTEM TAPE COPYING ON THE GENIE

One of the drawbacks of the Video Genie machine is that it is not possible to load System tapes from an external cassette. Actually you can't load from the number 2 port on the TRS-80 either, but as both possible recorders on that machine are external it is perhaps not so important. This program enables a number of functions to be carried out with the Video Genie. First of all a machine language tape can be loaded from either the resident recorder (which, of course, can be done without this program) or an external recorder plugged into the jack at the back of the computer. In addition, single or multiple copies of machine language programs in the machine can be duplicated using either cassette port. The prime purpose of this program is to give the user access to the exterior port of the Video Genie for System tapes. This is not only useful when making backup copies, but can also be an important advantage when difficulty is experienced in loading machine language programs from the resident cassette. It is perhaps important to note that this utility does not add any ability to the machine in the area of tapes which have anti-copying devices built in, or to tapes which have automatic load or run features. If, however, a tape would normally be loadable or copyable through the resident cassette it can now be done through an exterior cassette.

QUAGMIRE – A COMPUTERISED ELECTRONIC GAME

Quagmire was first invented as an electronic game and first appeared as a constructional project in ''Everyday Electronics''. This software incorporates all of the features of the original, plus several improvements. It is tempting to categorise it as a maze game, but in fact it is not. To a large extent it is a game of skill and certainly experience. Perhaps the best simile to describe it is to imagine a marsh criss-crossed by a network of narrow paths. The path is safe, except for certain spots (which are marked on the screen map upon which the game is played) which may be dangerous. If possible, the player should jump over them. However, sometimes they are particularly dangerous and landing on them can be fatal. It is a game of suspense, skill and strategy for 2, 3 or 4 players of all ages. The skill comes in because at the centre of the map is a flashing area which indicates the level of danger at the marshy sites. If it is flashing slowly it is safe to land, but the faster it flashes the more risk such a move causes. Indeed, if you land on one of these spots when the flashing is at its fastest then it is almost inevitable that the player will sink into the quagmire and his piece (of which, incidentally, he has four) will be lost from the game. The flashing serves a further purpose. To determine the direction of your move, the player must press one of the keys N, S, E, or W. If the key is pressed whilst the flashing block is illuminated, the move will be for two spaces, otherwise for one. This additional space can be very important because it allows the player to make rapid progress across the marsh and (often more importantly) to leap over the danger spots. This is where the element of skill enters the game, especially if the patch is flashing rapidly and danger is at its highest. Keying at the wrong time can land you straight into a danger spot. It is hard to categorise this game. It is most enjoyable and although we have never played the original, we would think that this computerised version has a large number of advantages. We imagine that in some respects it is similar to a ''de-luxe'' version of Snakes and Ladders, but it seems to have an appeal all of its own. The competitive ingredient is very high. In other words, a fun game.

TSAVE – A MEMORY DUMPING PROGRAM

We already carry a number of programs which will carry out this task of dumping sections of memory to tape. TSAVE, from Southern Software, however, was written specifically for use with their Basic Compiler listed elsewhere and we are therefore stocking it. The operation of TSAVE is that the user enters in as many ranges of memory as he wishes and then a start address. Entries may be made in either decimal or hexadecimal and indirect addressing is permitted. Once the ranges and the start have been specified the program enters a simple ''command'' mode which permits the entry of three commands, either R for Record, C for Check or Q for Quit. A particularly feature is that the letters can be entered as many times as you wish which will result in multiple records or checks of the same section or sections of memory. It can be seen, therefore, that any number of ranges of addresses can be saved on to the same tape and any number of copies of those ranges can be made.

RANDOM DUNGEON GENERATOR – A FANTASY GAME COMPILER

Random Dungeon Generator is a game aid for umpires controlling conventional ''paper and dice'' fantasy role playing games such as Dungeons and Dragons, Chivalry and Sorcery, Runequest, Empire of the Petal Throne etc. Those who have tried these as well as computer Adventure games will be in no doubt that the ''paper and dice'' games offer far greater flexibility and variety of play, plus all-important continuity. Their main disadvantage, however, is that the umpire must spend long hours designing and preparing the ''dungeons'' that the players will explore. At last, however, for users of the TRS-80 and Video Genie, this problem has been solved. Random Dungeon Generator is a suite of three 16K programs which allow the user to generate to his own specifications of size and shape any sort of human or non-human habitation, temple, palace, prison, tomb etc. The first program designs the floor plans of the ''dungeon'' complex. The user specifies the number of levels, how many are above and below ground, and the size and shape of each level. The program does the rest. The second program selects the contents of each room in the complex. The user chooses the function of each level of the complex – noble living quarters, servants' quarters, palace, temple, tomb, prison or lair. He selects whether the principal occupants will be warriors, sorcerers, priests, thieves, elves, dwarves or one of the other non-human races. He can give any name he likes to the whole complex and to the owner of the complex. Thus the program can generate a sorcerer's tower, a mighty temple, a dark and dusty tomb, a bandit hideout, a lord's castle, a royal palace, a noble mansion, a lofty pyramid, a goblin cave warren, or whatever the user's imagination can encompass. The encoded complex is then dumped on tape for permanent storage. The third program decodes the complex, displaying the floor plans on screen, showing the rooms, corridors, doors and secret doors, stairs and trapdoors. The user selects the floor level and room number he wishes to examine, and a full report on the contents of the room is displayed, including room function, furniture, decor etc., occupants, monsters, traps and treasure. If a sorcerer or priest is encountered, a full list of the spells he has available is displayed. It is then up to the players to decide their actions, and the umpire to adjudicate the results, according to the set of rules he is using. Random Dungeon Generator has been designed so that it can easily be customised by the user to fit the exact details of the particular set of rules he is using. All monsters, spells etc. have been placed in DATA lists in the decoder program, so that they can easily be replaced, if inappropriate, by monsters, spells etc. which better fit the rules used. Full instructions for modifying the programs are given in the documentation. Note that Random Dungeon Generator is not a complete game in itself and must be used in conjunction with one of the sets of rules mentioned above, or any similar rules. ''DUNGEONS & DRAGONS'' is the registered trade mark of TSR Hobbies Inc.

KFS-80 – A KEYED FILE SYSTEM

The Keyed File System allows rapid access to DOS records and, specifically, files, by means of a key. It uses an Index Sequential Access method whereby the files are organised in a tree structure which minimises disk accesses to specific records, thus file entries may be accessed by means of a specific key. The keys may be inserted anywhere into a record.

TREASURE TROVE – SEARCH THE DUNGEONS FOR TREASURE

Treasure Trove is a type of adventure game (note the small 'a') which can be played by 1-3 players. Although it is quite a familiar theme in that the player or players must search dungeons and corridors for treasure, this program does have a lot to recommend it. The dungeon is made up of blocks of 100 cells of four levels, each, of course, being 5' × 5'. The instructions include two sample play sheets, the first is made up of a map of one level and the second a map of all four levels. Thus the player can map his progress as he goes. The winner, of course, is the first person to retrieve a set amount of treasure and get out alive. Play begins at the centre cell of the top level and each player may explore in the direction of either of the four compass points from this entrance. Whenever a player moves to a new cell it will be displayed on the screen along with its location and whether there are stairs leading up or down. These cells are of two types, chambers and corridors. The former contain more treasure than do the latter. Also, corridors are always safe, but chambers may contain monsters or traps. Some doors are secret and allow movement in one direction only. Some stairs are the same. This latter

provision can be a bit tricky because if you do not watch out, you can go down a "down only" staircase and have a lot of problems getting back up. Any time you find yourself in a chamber with a monster you are in a combat situation. You will be told the monster's strength and it is for you to decide whether to attack or attempt to retreat. If you choose the former, you will enter one round of combat from which your chance of success will depend on your strength as does the monster's. After combat you will probably have lost some strength as may have done the monster, but if you are both still alive you will again be given the chance of attacking or retreating. Combat continues in this manner until one of you dies or you retreat. If the player is successful he may find some treasure to be picked up. A retreat is not always successful, but perhaps it would be better to keep some of the more intricate parts of the game a secret until it is played! Strength is a measure not only of the player's ability to fight, but also the weight that he can carry. A number of factors can reduce this strength. Obviously losing a combat round would, but also carrying treasure saps your strength as does retreating. The closer the weight you are carrying gets to your strength, the more likely you are to lose a strength point when moving. Treasure may be banked throughout the game so as to lessen the load. There are six magic items which may be found ranging from magic shields, swords and carpets to strength potions, moon dust and lucky charms. Finally the good news — all is not lost if you are killed. Treasure Trove is a three generation game, that is to say, if you get clobbered your son inherits your treasure and may continue the family quest. This program, as supplied, is compatible with disk Basic and a customer can transfer it if he wishes. However, a disk Basic version is available and as it has one or two slight improvements, customers would be better advised to purchase it.

SERPENT — AN UNDERWATER HUNT

This is a unique game. Essentially it is a shooting game, but its prime appeal is that it takes place underwater and the battle is between submarines, serpents and whales, very big whales we might add. The player is in command of the submarine and can fire torpedos with which he must hit large sea serpents that are wriggling all over the place. When he does he may either kill the serpent, in which case it sinks to the bottom of the sea, or he may split the serpent into two rather like cutting a worm in half, and he will double his problems. The decisive factor is whether the torpedo hits the first three sections of the serpent or otherwise. If the serpent collides with the submarine it is sufficiently big to damage it and the submarine can only survive five collisions. The whale must be extraordinarily large because it is several times the size of the submarine, and if it hits the submarine then unfortunately the submarine sinks to the bottom and the game is over. One of the great attractions of the game is that it can be set to almost any speed and skill level required. There are five pre-set speeds, but the sixth is a "special mission" in which all of the following parameters can be set up: overall game speed, submarine speed, torpedo speed, number of torpedos in the salvo and serpents' speed. In other words it is pretty well possible to sculpture any grade of game that one wants. Score, of course, is kept of how well you are doing which will introduce competitive spirit with more than one player. All in all, quite a bit of fun and it certainly makes a change from zapping space ships. Written in machine code. Available on tape or disk.

DESCRIPTIVE STATISTICS PLUS CENTILES — EASY TO USE PROGRAMS

Many statistical programs suffer from being over complex. One of the chief advantages of this one is that it is extremely easy to use. It is effectively a composite program being made up of three parts. The first calculates an extensive range of descriptive statistics. The second illustrates a sample distribution with Histograms and a table of Centiles. The third creates a cassette data file of the univariate data. The program is designed to be used by those with no experience in computing and also all non-statisticians. Prompts and instructions are included throughout the program. Input to the program may be entered in three ways: from the keyboard, as data statements or from the cassette data file created by the program. After the data has been input in one of these ways the Descriptive Statistics section of the program will calculate the following.

Sample Mean	Skewness	Variance (Unbiased)
Standard Deviation (Unbiased)	Minimum Value	Variance (Biased)
Standard Deviation (Biased)	Sum X	Kurtosis
Standard Error	Number of Values	Maximum Value
		Sum X Squared

The second part of the program is the Centiles (some people call them Percentiles) and Histogram section. The program has been written to allow the user to view the distribution of the values at high and low resolution Histograms to check if the data appears normally distributed. For non-normal data a sample distribution can be analysed without assumptions of normality by generating a table of Centiles. The confidence limits of the Centiles are also calculated. So far as is known it is the only commercially available program which calculates Centiles and their confidence limits. Hence this section of the program calculates the Centiles of a sample and 95% confidence limits of the Centiles. The sample distribution is illustrated with a Histogram with 50 groups, a Histogram with 10 groups and cumulative frequency (%) distribution. The final section of the program enables the user to create a permanent data file on cassette and six options are available therewith, namely to create a data file, to check it, to change an entry on the data file, to delete an entry, to extend the data file and, finally, to copy it. The programs have been written so as to accommodate virtually unlimited sample size, although, of course, in practice the size of the data file will be restricted to a practical size of cassette.

FOREST OF MORDOR — WATCH THOSE DWARVES

Although this program bears some relation to maze software, it is made far more interesting by the inclusion of rather weird and wonderful things. The game is played on a board which comes up on the VDU. It is essentially an outlined square with various letters, numbers and graphic symbols randomly spread over it. The object of the exercise is to get from the starting point to the exit without being overcome by the many obstacles put in your way. These are Trolls, Dwarves, Orcs, Treorcs, Gormaz and, from time to time, Seredic the Magician. Treorcs are sleeping Orcs and do not move, but colliding with them will mean that you will be eaten. Mysterious forces do occasionally awaken them. Dwarves are slow moving, but extremely ferocious. Unfortunately they have rather one track minds because whenever they encounter each other they mate and produce the dreaded Orc. Trolls are rather like fast dwarves, but are constantly at war with the dwarves so they will destroy each other if they meet. Orcs are probably the biggest problem because they eat anything in their path and gain power thereby, hence they can move more and more quickly. The Men of Murduin are long time enemies of the Orcs and are constantly hunting them. If you are lucky, therefore, the odd Orc will be killed by the mens' arrows. Seredic is a magician and when he appears you may optionally sample his powers. If you receive an elf clock you will become invisible for three moves, for instance. You can light flares from time to time which have the effect of stunning the creatures temporarily and enabling you to move. The player is armed with some arrows which when shot will destroy the first thing that they reach. Occasionally an army of Gormaz will pass through the forest and they destroy everything in their path. So, as you can see, the trip through the forest is one fraught with danger. The player starts out with 1000 points, each move costs 5 and there are various other penalties. The game is, as we said at the beginning, made more interesting by the scenario which converts a moderately interesting maze game into a game which has considerable appeal. ~~The program is compatible with disk Basic.~~

ELEMENTAL MAZE — A PLEASANT WAY TO LEARN

This is an interesting program aimed at pupils in the latter years of C.S.E. or 'O' Level courses, the first year of an 'A' Level course, and, of course, their teachers. The player is presented with a maze on the screen. The maze is made up of black and white squares. You are not allowed to pass through the white ones and when you arrive at a black one you will be given a clue as to the name of an element, such as Manganese or Nickel (that is the element, not the clue). Each move costs the player 10 points, but 15 may be gained by identifying the element described correctly. Identification of an element is only available on the first visit to a square and the player starts with 500 points. Each time the maze is entered or the game run, the elements are re-shuffled. A list of all the elements is included in the instructions and a list of those actually used in the maze is available from the screen. An example of a clue given is "A metal whose Chloride or Nitrate is used to test for Sulphates". A useful educational program which we are sure will make the learning of the elements more easy. Elemental Maze features sound.

BLACKBOARD – MAKE YOUR COMPUTER A DISPLAY TOOL

This program generates letters which are about 1" high and so are very easily seen. The screen format is 6 lines of 21 characters. The maximum length of the display is 480 characters including control characters. All letters and numbers may be shown, together with comma, space and full stop. The program is very nicely written, resulting in an easy to use piece of software. The page is composed without any difficulties and the commands available are almost always shown on the screen. The composed message may be stored on tape and, of course, loaded therefrom. When actually composing the message, the user types onto a simulation of the screen, thus making it very easy to compose messages with considerable visual impact. The display of the message, of course, is continuous. Rather a nice touch is that the letters are displayed as they are normally written, in other words, there is a very slight delay as the letter is printed giving the appearance of writing; a letter does not suddenly appear on the screen. The writing speed has been chosen carefully to provoke maximum curiosity from the person looking at the display. It is therefore ideal for window displays, parties, discos, etc.

WONDERLAND – A SEQUEL TO THE FAIRYTALE ADVENTURE

In the last list we published a new Adventure called Fairytale which was written in Basic. The author has now written a sequel to it. In the earlier description (page 32 of the catalogue) we discussed the merits and otherwise of Basic Adventures so we will not go through that again. Wonderland follows Fairytale in content in that it is aimed at family participation. Again fairytales and nursery rhymes are used, indeed about 10 stories or rhymes are referenced, together with Mickey Mouse, Tom and Jerry, and so on. Such a subject may deter some customers from buying these programs, although the reaction to the first one has been positive. We would suggest that customers try to get over their inbuilt manly discrimination against fairytales and wonderlands and have a go at these programs. They are surprisingly good fun. After all, it isn't very often that you get the chance of playing croquet with a flamingo on a computer!

SHOWDOWN – A GRAPHIC GUN-FIGHT

This is a graphic game for 1 or 2 players which features good graphics and sound. Each player has control of a graphic "man" (in the case of one player, that is to say playing against the computer, then the computer controls one of the men) whose arm can be raised and lowered. In addition, the man himself can be taken up and down one side of the screen. Both gun-fighters have a six-shooter which, incidentally, unlike some films, are restricted to six shots – you have to have a re-load period after they are gone – and the idea, of course, is to shoot each other. It is nice and simple. The only complications are some wagons and cactii which come between the gun-fighters from time to time. A nice harmless game, the biggest feature of which are the graphics. It is available on tape or disk.

MYSTERIOUS ADVENTURE ADVICE SHEETS – IN CASE YOU GET STUCK

Advice sheets are avilable for those customers who get stuck during an Adventure. It should be emphasised that they are not step by step instructions, but are merely various items of advice which are sufficient to get you unstuck, but not so much as to solve the whole Adventure for you.

ALIEN ARMADA – YOU MAY THINK BETTER THAN INVADERS

This is a straightforward arcade game in many respects similar to the well known Invaders. There are no buildings to hide behind at the bottom of the screen, the laser launcher is out in the open and has to run the gauntlet of the alien invaders' bombs. Unfortunately, unlike the Invaders, the aliens do not stay put in their neat rows and slowly work down the screen. Three or four at a time come blasting out of their formation, dive bomb the laser launcher and drop their bombs at the same time. We feel that many people will prefer Alien Armada to Invaders. The fun is certainly fast and furious and you have to be very quick to get anywhere at all. The program, of course, is written in machine language and sound effects are provided. Maximum score is 99,990 and either one or two players may take part. There are three levels of difficulty. In the first the attacking aliens and their bombs are at the slowest speed. Personally we have not yet got beyond this. The intermediate level means that the attackers will continue to move at the same speed, but the bombs they drop speed up, and in the advanced level the attackers move faster as well as the bombs. The player is given three laser bases to begin with and can only attain more when he gets to 5000 or more points. There are four rows of 10 aliens per row and the points go from 10 to 40 depending on the row in which an alien is hit.

DREAMWORLD – A SEQUEL TO FAIRYTALE AND WONDERLAND

These are all Adventures with fairytale and nursery rhyme contents written in Basic. As a matter of fact it was not intended that they should be a series when Keith Campbell wrote the first one, Fairytale, but they have been so well received that Wonderland and now Dreamworld have followed the original. Dreamworld is based on the following stories and rhymes: Oliver Twist, Wizard of Oz, Christmas Carol, Peter Pan, Jack and Jill, Ding Dong Bell, Old King Cole and Little Jack Horner, with, as the author says, a guest appearance from Santa Claus. The network of the game comprises a real world and a fantasy world. It is possible to sleep and dream when in bed and subsequent dreams land the player in different locations and open up successive sections of the network previously inaccessible. The player can move from dream world to real world, but not vice-versa, hence quite often fantasy becomes confused with reality. The command "WAKE" always terminates a dream and returns the player to his bed. There are 12 teasures in Dreamworld and about 35 locations. Although it would be foolish to pretend that these programs do not have more appeal to children than to grownups, it is equally fair to say that the grownups that we have seen playing it seem to thoroughly enjoy (once they get over the initial embarrassment) a trip down memory lane.

TENPIN – TENPIN BOWLING ON THE COMPUTER

This is another program from John Allen with the emphasis on graphics. It represents a very good simulation of a game of Tenpin Bowling. So far as is known, normal Tenpin rules and regulations are followed and the game is certainly good fun to play. There can be between 1 and 4 players and sound effects, of course, are included. The program is written in machine language for speed. When you start the game the ball comes up the right hand gulley of the lane, the ball is taken across the lane with either one or two arrow keys and thrown with the space bar. As on a regulation Tenpin Bowling alley, there are marks about one third of the way down the lane and spin can be placed on the ball with an arrow key, so long as it is done before the ball gets to the marks. In the same way, the speed with which the ball leaves the hand can be controlled by the length of time that the space bar is held down. The faster the ball goes down the lane the fewer the pins that will be knocked over. The ball, in other words, goes straight through. On the other hand, the more spin put on the ball, the more likely that the pins will flay all around when hit and strike other pins. Two balls, of course, are played per frame. We rather feel that it is harder to play than the actual game, but as with John Allen's Pinball and Astroball, it does follow a real life game very closely. If there is any criticism it is that although the pins always fall in a logical manner, they do not always appear to fall in the correct order, that is to say, if logically the ball is going to hit a pin on the first rank and one on the back rank, one sometimes gets the unusual appearance of the one on the back rank falling before the one on the front rank, but this is a very small criticism. All in all, it is very good fun.

SPACE ROCKS – LIKE ASTEROIDS? NOT QUITE.

In that this arcade game is concerned with rocks falling all over space it is going to be compared with Asteroids, but in fact it has a little of Asteroids and a little of a space battle in it. Essentially there are two objects of the game. Firstly to break up asteroids before they break you up, but secondly to destroy time bombs before they detonate. The normal hyperspace function is also included. Each player starts with three ships. When you have scored 10,000 points you will get another. The player can only shoot four shots at one time. Time

bombs appear on the screen randomly. There are two types, one starts from the left hand side of the screen, the other from the right. Both move horizontally, of course, and there is a number in the middle of the bomb which counts down to 0 as it moves across the screen. If you do not shoot it down before it hits 0, the bomb explodes, blowing up the ship and every rock on the screen. It is a flexible game in that there are no less than 10 different levels of play available. The level influences the number of rocks that fly around at the beginning and how often time bombs appear. The value of the time bomb countdown is also affected. The first five levels are regular speed rocks or asteroids and go from 1 to 5 rocks per screen. The last five levels all have super speed rocks and again go from 1 rock to 5 per screen. Space Rocks includes a subsidiary game called Space Battle. This enables the player to fight time bombs and enemy ships without worrying about rocks, that is to say, there are no asteroids in Space Battle. Although we imagine it is up to everybody to make their own judgement, this feature seems to us to be of more use in providing an opportunity for practising control of your space ship rather than meaning to be a serious game.

SHEEPDOG – MACHINE LANGUAGE VERSION OF AN OLD FAVOURITE

There have been many versions of this popular game whereby the player controls a dog which is supposed to herd sheep into a pen. Indeed, some time ago we offered to supply free a listing of a Basic version. However, the addition of machine language coding to an already popular game supplied us with a program which we could not refuse. There have been a number of improvements to the original concept, particularly the capability of choosing the number of sheep, the speed of the sheep, the speed of the dog and the time allowed for the completion of the herding. Graphic blocks are used for the dog and the sheep. The dog, of course, is easily discernible. Of particular importance, and resulting from the type of coding used, is the ability of both the sheep and the dog to move in a diagonal direction. Most Basic programs allow for the sheep to move diagonally, but it is not quite so easy in Basic to make the dog behave in the same way. In view of the number of game parameters which may be set, the author has included the ability to break off a game part of the way through should the player decide that he wishes to change the parameters.

ASTRONOMICAL CALENDAR – SUN AND MOON CALENDAR

This program is written by Mr. A. J. Woodruff who wrote both Astrolog and Horolog shown elsewhere in this catalogue. As an expert on this subject he has now written a program to make it very easy for astronomers and other interested persons to ascertain various items of data which normally require either the consultation of a number of tables or the use of quite complicated calculations. The data output by this program is as follows:

1) Position of the sun
2) Position of the moon
3) The time of sunrise
4) The time of sunset
5) The time of moonrise
6) The time of moonset
7) The age of the moon

This data is available almost instantaneously for no less than 170 different towns in the United Kingdom, or if the user is not situated in any of the towns contained in data statements of the program then he may enter his position by way of latitude and longitude co-ordinates. As indicated, Mr. Woodruff is highly knowledgeable on this subject and has incorporated into the program all of the requirements of an astronomer, most of which we must confess are way over our heads. A correction for a refraction is incorporated. A correction is also included in moon observations for the parallax effect of the observer being on the surface of the earth. Overall basic accuracy is within one minute of arc for the sun and plus or minus two minutes for the moon. The sunrise and sunset accuracies are within one minute of time. Local times of moonrise and moonset correct for refraction, parallax or dip are accurate to plus or minus two minutes of time. The age of the moon is given in days and hours and is accurate to three hours. The program is straightforward and convenient to use and two options are available for entering a new date with the same locality or for entering a new locality. If neither of these are chosen then the calculations will continue to be based on the locality and date originally entered. For those who need this sort of information we would imagine this program is close to being essential. The calendar, incidentally, is valid from January 1st 1900 to December 1st 1999. The program is supplied on cassette but is compatible with disk Basic.

FRENCH VOCABULARY – AN AID TO LEARNING FRENCH ON YOUR COMPUTER

There are a number of ways of learning a foreign language and indeed there are a number of computer programs that have been written to assist. Many of them, however, go into grammar and technicalities of the language more than is necessary for the average user who wants to learn sufficient of a language to enable travel in the appropriate country. This program, which teaches the vocabulary of French, has been written with simplicity and efficiency in mind. It is highly recommended as a tool kit to enable the learning of French words either for the traveller or the student up to 'O' level. Included with the program are 10 vocabularly data programs each containing 300 French/English word pairs. The total of 3000 word pairs provides a comprehensive basic French vocabulary. Each French word, of course, is matched with the English word, giving its meaning. If there is more than one meaning the most common is given, and if there is no exact translation the closest available is given. Because of the importance of gender in French, the nouns have been written with an article to indicate whether they are masculine or feminine and the student must use them. The nouns, which make up well over half of the vocabulary, are mostly arranged according to subject matter. This greatly aids learning. Each set of 300 word pairs is sub-divided into 10 groups of 30. Frequently, more than one group is assigned to any particular subject. For instance, in the first set of 300 the first two groups are concerned with motoring, the next two to words that would be required in and around a town. One group is assigned to airport words and so on and so forth. All of this data is used in three principal tests, a speed test, a multiple choice test and a spelling test. All these tests may be used either in the English/French or French/English direction.

Speed test

In this test the word is flashed onto the screen and a countdown starts at whatever speed has been selected by the user. Before it reaches zero the user should say out loud the translation of the word. As he does so he presses the space bar to stop the count-down and display the correct translation. If he fails to do this on time a hesitation time is measured and if he has said the wrong word or has been unable to remember the translation he indicates this to the computer. All words where there is hesitation or error are repeated later in the test. In the end a score is displayed out of 1000 which has taken into account the number of errors, hesitation time, speed of the test and number of words being tested. Obviously with this test it is possible to cheat, but for the serious learner it is an invaluable aid.

Multiple Choice Test

With this test a word is flashed onto the screen with five possible translations. A clock is started and the user has to type in the number of the correct word as quickly as possible. Errors and time are recorded and are taken into account in the final score. Words which produce errors are repeated and in normal use are cheat-proof.

Spelling Test

The spelling test has been included to avoid the danger of someone learning to recognise words only in broad outline. It demands that they type in the correct spelling of the translation on the screen. Errors are repeated later and the final score is given. Spelling must be exact. In normal use this test is cheat-proof.

When the final score is displayed at the end of each test the user can decide whether to repeat the test, do a different one or exit the program. While the program is running, incidentally, the Break key is disabled. A further nicety is that in all tests in which repeats are made, that is to say, questions are asked again that have been inaccurately answered, the order of such questions has been mixed up.

It is possible for the user to construct his own data tapes for use with this program and guidance is contained in the instructions which accompany the program. A very nice feature of this program is that the data tapes are not of the usual type loaded under the INPUT command. The data is held in data statements in Basic program lines. When the governing program is initiated it is blocked off and data is fed in as additional data lines, then the block is removed and the program merged with the data and this is done every time that new data is required. This technique speeds up input of data by a substantial factor.

SAM LOYD – A PUZZLE

It certainly is a puzzle, in fact there is so much in it that it is hard to describe. At some time or other we have all seen the hand held puzzle, nowadays usually in plastic, but in "olden" days, metal, wherein 15 small blocks are free to move in an outer square which has room for 16 blocks, one block space is spare. In other words, the idea is, with the normal puzzle, that the blocks are numbered from 1-15 and one has to arrange them so that they read numerically from left to right. Sam Loyd is based on this premise, but it has five choices of puzzle or function. The first is a computer representation of what we have just described, in other words, the blocks to be moved are numeric. The last two options that one is given when starting the program are concerned with making and saving your own puzzle and loading such a puzzle from tape. The other two versions or puzzles require a little more explanation. The first is essentially a crossword made up of letters which can be read either vertically or horizontally into meaningful words. On command the program will shuffle the letters and it is then up to the player to attempt to solve the puzzle. Alternatively, he can instruct the computer to solve it itself, in other words, to "unshuffle". All commands, incidentally, are entered by placing a cursor on to the tile to be moved. This program was written by Mr. M. Norris who wrote Space Eye, Cube Hunt and others, all of which are well known for their excellent graphic content. This program follows in the same tradition. The tile graphics are first class, but of special relevance is the final option of the puzzle – a picture puzzle. With this, the blocks, when arranged correctly, form a picture. When shuffled, obviously they do not. In fact it is quite surprising how a perfectly normal house can change when its picture is split into 15 parts and they are all jumbled up. One should not denigrate the cleverness and interest of the number and word puzzles, but we feel sure that it is the picture puzzle that will be of most interest to purchasers. It is not only difficult but we do not feel that it is too much to say that it is an example of TRS-80 and Video Genie graphics at their highest level. As mentioned, the picture puzzle that is included in the program is a picture of a house. As if this was not enough, a data tape is supplied which contains data for four other pictures, namely a mountain scene, the TRS-80, a bear and a message. We briefly mention above that it is possible to make one's own puzzles. This is done by using the cursor keys to draw a picture or, for that matter, anything else, on the screen. When you are satisfied with your design the computer will compile the puzzle and, again as mentioned above, if you wish you may save it to tape for future use. This program is a first-class example of an old and well known theme being taken, enhanced and adapted to make it into a first-class microcomputer game or puzzle program.

EDAS 3.5 – A NEW EDITOR ASSEMBLER FOR THE MODEL I AND III AND GENIE

This is a new disk based Editor Assembler available for the Models I and III TRS-80 and I and II Video Genie. Almost all of the currently available Editor Assemblers have been based on the original one written by Microsoft for Tandy's. This was a cassette based program, but it has been adapted principally by Apparat in NEWDOS so that it can write to and from disks. For some time it has been apparent that a completely new Editor Assembler is required in the market, and particularly one which will assemble direct into memory. It was with this in mind that we are introducing EDAS.
EDAS has a number of advantages over the previous Editor Assemblers. The principal one has already been mentioned, namely the ability to assemble direct into memory. All of the earlier Editor Assemblers had to be outputted either to tape or disk and then fed back in. The exception to this is the Microsoft Editor Assembler Plus available on cassette, and as a matter of fact this program bears quite strong resemblances to that program. EDAS supports all of the "normal" functions of an Editor Assembler and in addition the following features are available:

Assembly Features

1) A *GET directive allows assembly directly from disk source files. This takes the place of a Macro feature and provides an assembly capacity essentially limited only by the size of the symbol table which is retained in memory. Source files may be linked by multiple *GET statements in the program allowing literally hundreds of thousands of bytes of source code to be assembled.
2) Conditional assembly is provided through the use of an IF directive. Allowable conditions are greater than, less than and equal to.
3) Allowable operators are addition, subtraction, shift, logical and, logical or, exclusive or, multiply, divide and modulo.
4) As mentioned, object code may be assembled directly to memory or to disk if preferred. A Branch command allows jumping to the code in memory for debugging with an exit provided back to the Editor Assembler with the source code intact.
5) Some four or five pseudo operations on a line printer are allowable.
6) A COM pseudo op code allows comment lines to be written to a disk file along with the object code. These comment blocks will not be loaded with the object code, but merely provide an easy way to store such things as copyright messages in your object code files.
7) Hexadecimal, decimal, octal or binary are permitted for constants.
8) The Assembler generates a symbol table sorted in alphanumeric order. The output is in three across format with symbols of up to 14 characters allowed. An additional cross reference file may also be generated for use with the XREF mentioned later.

Editor Features

1) EDAS will write and load text files directly to and from disk with provision for text file concatenation. Many different types of text files can be loaded with the Editor including files without line numbers.
2) The Editor can write source files with or without line numbers and with or without a header.
3) The Editor supports block moves of lines, global replacement of text strings over the entire buffer and a Find command to locate all occurrences of a specified text string.
4) Line editing maintains command syntax identical with the Basic Editor in the interpreter and therefore, of course, is similar to the earlier versions of Editor Assemblers. In EDAS, however, Character Insert, Delete, Change, Locate, Kill, Hack, New Line, Display Line, Quit etc. are all supported.
5) The text buffer can be printed in whole or in part with or without line numbers.
6) Disk directories may be displayed and files killed whilst remaining in the Editor Assembler.
7) A memory utilisation command is available which will display the bytes used by the text, the bytes available and the first free address.
8) A rather nice command permits the viewing of a disk source file without actually loading the file into the text buffer.

In a 48K machine approximately 32K will be available for the text buffer. This figure, however, may be increased by approximately 5K by deleting the assembler portion of the program. Although this, of course, is large, it should be remembered that the *GET command is available permitting assembly direct from disk source files. In addition to the above, there are three separate utilities provided. The first is a general purpose disk to disk, tape to disk and disk to tape program that has been designed to provide the capability of appending two or more CMD, CIM or OBJ files or SYSTEM tape files, therefore EDAS has complete compatability with such files. Offsetting is permitted. SYSTEM cassette tape files can be created from non contiguous blocks of memory. The second utility is entitled TTD which is a program for transferring to disk a source cassette file created with earlier Editor Assemblers, particularly the Radio Shack original and Microsoft's Editor Assembler Plus. The third utility, XREF, is used to generate a cross reference listing all symbols used in source code. EDAS comes complete with an extensive manual in a loose leaf binder.

EDAS IV – A NEW EDITOR ASSEMBLER FROM MISOSYS

The EDAS 3.5 version (now 3.5.2) is suitable for use with TRSDOS and LDOS. EDAS IV is compatible only with LDOS and it was brought out essentially for use with the C language compiler, described elsewhere in this catalogue. Although EDAS IV can be purchased alone, to be used on its own, that is to say without a C, we would strongly recommend that customers who are not interested in the C language should stay with the 3.5.2 version of EDAS. All of the features of 3.5.2 are included in IV, plus those following.
C requires some of the features of LDOS in order to operate, hence, EDAS IV must also run under that disk operating system. EDAS IV is probably the most powerful combined editor assembler issued for the Model I, Model III Tandy machines and Genie machines. A Model II TRSDOS version is going to be available at the end of the year. Among its features are direct assembly from one or more source disk files or memory buffer; conditional assembly, macro assembly; extensive cross-reference listings and a comprehensive line editor which supports both upper and lower case text entry.

EDAS IV – A NEW EDITOR ASSEMBLER FROM MISOSYS

The position with regard to EDAS 3.5.2 is explained in the Update section of this list. Customers are referred thereto as it will not be repeated now. Although it bears the same name, EDAS IV is a completely new re-write over EDAS 3.5.2. As they are both Editor Assemblers, however, they obviously share a lot in common and customers are referred to the write-up on EDAS 3.5.2 on page 90 of the typeset catalogue and page 129 of the earlier one. All of the facilities mentioned in that write-up are contained in EDAS IV. EDAS IV came into being principally to support the C language compiler, described elsewhere in this listing. C requires some of the features of LDOS in order to operate, hence, EDAS IV must also run under that disk operating system. EDAS IV is probably the most powerful combined editor assembler issued for the Model I, Model III Tandy machines and Genie machines. A Model II TRSDOS version is going to be available at the end of the year. Among its features are direct assembly from one or more source disk files or memory buffer; conditional assembly, macro assembly; extensive cross reference listings and a comprehensive line editor which supports both upper and lower case text entry.
EDAS IV assembles absolute core image object code to disk as a directly executable load module. In other words, as a /CMD file. Source code can exist in memory or disk files. The GET command which was so popular with EDAS 3.5.2 and earlier versions has been extended in EDAS IV and GET files can now be nested to five levels. Tradition is continued in that EDAS IV uses the default file extensions of ASM for source and CMD for object code files, thus making it near impossible to overwrite source or object. EDAS IV, of course, respects HIGH$. A powerful SEARCH filespec assembler directive will invoke automatic search of a partitioned Data Set containing a library of source code. The PDS directory will automatically GET any PDS member that would resolve an undefined label reference. This process is similar to the function of a relocating assemblers link process. In EDAS IV the source library is ISAM accessed for minimum input output overhead. The utility PDS is required to construct such sub-written libraries.
Conditional assembly is supported with five pseudo-ops. These conditional expressions may be nested to 16 levels and are IF; IF less than; IF equal to; IF greater than; IF a defined label; IF not a defined label; IF a reference label and finally the conditional assembly also supports the IF × ELSE ENDIF. EDAS IV provides for binary, octal, decimal, hexadecimal and string constants. Constant declarations can be concatenated on one line by separating the terms with commas. This permits highly complex expressions to be used. Labels may be up to 15 characters long and must start with less than @ or$. Positions 2 - 15 may also use a ? or -. The MODE assembler directive is available to make a unique character substitution for the ? characters appearing in the labels of all files accessed with the GET command. The string value will increment each time MOD is commanded. This will provide local label support for routines read off of disk.
A logical origin pseudo-op LORG will assemble load module files with the load address offset whilst execution addresses are based on the ORG address. When using EDAS IV to assemble applications that block move sections of code, the LORG can be used to assemble the entire job at once.
EDAS IV provides many switch options, obviously all of the common ones and all of the ones previously included in EDAS 3.5.2. An NM switch suppresses listings of macro expansions and XR generates a cross reference data file for downstream processing by the cross reference utility.
Single level macros are supported with both positional parameters and parameters by keyword. Values can be applied to any parameter when defining a macro to allow for expansion time defaults if a parameter is omitted at the time a macro is referenced. Macros can, of course, be defined both in Memory or in Source files, but must be defined prior to being referenced. Local labels are supported.
Additional pseudo-ops have been included in EDAS IV. For instance COM will allow a comment line to be written to the load module. These comment records will not be loaded when executing the module, but do provide an easy way to store such things as copyright messages in the object file. PAGE ejects a listing to a new page; SPACE generates additional line feeds during listings for highlighting modules and other pseudo-ops are included to manage the titling and sub-titling of lists.
So far we have attempted to describe the principal improvements of the Assembler. There are, however, a number of improvements to the Editor. So far as the actual editing is concerned, EDAS IV is similar to 3.5.2 in that it is pretty well identical to the command syntax of the Interpreter.
EDAS IV will load and write text buffers to or from disk with the ability to concatenate text files in memory. The standard Source file will be unheaded and un-numbered, thus saving approximately 20% of disk file storage. EDAS IV, of course, will automatically recognise and properly read a file which has been headed and numbered. Text may be input in upper or lower case, with automatic conversion. An option allows for case consistency, thus text remains as it was input. Therefore, the editor can be used for assembler source, plus source for other languages, such as C and Pascal.
There are many convenience features included in the editor. Blocks of lines may be re-located; character strings may be globally changed; blocks of lines may be copied or duplicated.
The Search String command is straightforward, but the string may be up to 15 characters in length. Single line scrolling is supported. A "warm boot" is supported, the effect of which is to abort the current operation, clear the screen and re-initialize line numbering, but at the same time maintaining the current text buffer. The in use and remaining memory may be displayed, as may be the first available in memory address. The latter is rather useful for assembling into memory, then executing a branch command for de-bugging purposes.
EDAS IV provides Mini DOS type directory query and file kill functions. A View command will list a Source file to the screen without affecting the buffer contents.
EDAS IV, as we said at the start of this description, is in our opinion the most comprehensive editor assembler produced for a micro-computer. We would emphasize, the above description essentially is in addition to the description earlier in the catalogue of EDAS 3.5.2.

IMPORTANT – IMPORTANT – IMPORTANT

It is absolutely essential that customers inform us of their machine model number and its configuration when ordering.
We would remind customers that it is their responsibility to make sure that the program they order is the one they actually want. Where the program is stated in the index to be compatible with a certain configuration then it is compatible with the standard version of that configuration. For instance, if the index notes a program as being compatible with "48K/DB" Model C machine, then the program is compatible with the standard Tandy or Cumana drives for the Model 3, i.e., 40 track double density. We cannot be responsible for goods supplied for non-standard machines **regardless of whether the configuration is mentioned in the order or not.** If you are in any doubt as to a non-standard configuration, please telephone us and ask.
Furthermore, we get a number of orders which seek to make the supply of the program subject to that program running on a particular configuration. If we know, one way or another, then obviously we will comply. But we are unable to check programs on a large majority of configurations because we simply do not get time to, or, in many cases, we do not have the equipment. Indeed, on some occasions, it would be impossible for us to have the equipment, in that it is home made!

KUBIK – THAT CUBE AGAIN

Rubik's Cube is now so well known as a puzzle that one almost feels embarrassed in talking about it. It took the country by storm and not many fathers have been freed of the obligation to buy their children one of the many sizes of cubes available. At one time we felt that almost everybody with a computer was also sitting down and writing solutions for it. It is not giving away any secrets when we say that we had a number of versions submitted to us and had, as a result, considered publishing at least two, until the magazines decided to publish programs for solution of the cube. Despite this, some people will prefer to purchase the program ready made, also, at the present time the program that we have seen described in a magazine did not contain graphics, in other words, the cube is represented in a single dimension. This program uses graphics to their best advantage. It is probably fair to say that they are as good as can be produced on the TRS-80 or Genie. It must not be forgotten though that to depict a cube in full dimension on a screen is extremely difficult. The best way of describing the program is to run through its main options. The first is for some abbreviated instructions. The second is a prompt as to whether or not a user wishes to resume a saved position. As will be surmised, the state of the cube or puzzle can be saved so that it can be restarted at a future time. One particularly good feature of this program is that the saving can be to either tape or disk. In other words, if you are working on the cube in the middle of the night and suddenly decide that you want to go to bed, you can save the cube to tape or disk. The next option is whether or not you wish to enter a position. Although, as we have said, the graphics are probably as good as they can be, use of the program will be enhanced by using a plastic cube at the same time. Accordingly, if you have struggled for some time with a cube to no avail, you can enter that position in with this option. The fourth prompt is for a move on the operator's part. This may either be to turn a face – either clockwise or anti-clockwise – or to view the cube from a different corner. The fifth option is to save a position and we have dealt with this under the command that brings the position back into the machine. The sixth command is used when you want the computer to try and sort the cube out. In view of the billions of permutations possible, it is not practical to say whether or not the machine can solve the cube within a reasonable length of time, hence this command. Although normally solving the cube may come back with a ''position impossible'' or ''piece missing'' message, usually this will be traceable to an incorrect input from the operator. Unless one or the other of these two messages appears, the poor old computer is still working. We have played the cube quite a few times and we have never had one of these messages. As the machine works it will state what it is doing and illustrate the moves needed. Every so often it will require the operator to press the Enter button so as to give him a chance of studying the position before proceeding. When this occurs, the operator can make a separate command which will regain him manual control. The final facility available is a self test, in other words, the program can be made to repeatedly scramble the cube by generating random moves, solve it, scramble it again and so on, ad infinitum. The program has survived 12 hours of this self test without reducing itself to lunatic status.

SPEEDY – CASSETTE SPEED UP ROUTINES

Ever since the TRS-80 Model III was issued, Model I users have cast a longing eye on the 1500 baud rate of the newer machine. So far as the software is concerned, such a routine does not present great difficulties, after all, although we are not suggesting such a criminal course, one could simply copy the appropriate ROM routines out of the Model III machine. In the short term such a course might be practical. However, if one approaches the problem of speed up routines simply on the basis of the software, then one is overlooking the most important fact, namely that however marvellous the software may be, the hardware is not designed for any rate other than, in the case of the Model I, 500 baud. To a large extent, therefore, the software writer has to rely on the tolerances of the hardware, rather than its efficiency. The TRS-80 Model I, particularly the original ROM versions, are well known for their tape loading difficulties. When the Video Genie came out, its designers took note and the cassette input and output circuits are very ''tight'' and, at 500 baud, very efficient. The result of this is that speed up routines tend to work better on the TRS-80, indeed not much above 750 baud will work at all on the Video Genie. In that the software writer is relying on tolerances, rather than the more normal strict design criteria, it follows that a speed up routine tied to a specific baud rate will work on one machine, but may not work on another. Mr. Titcombe, the author of this program, has taken what we feel is the best approach, namely he has given the user the opportunity to choose between six baud rates, in addition to the original 500 baud. They are 750, 1000, 1250, 1750 and 2000. The user may, therefore, try all of these speeds and find the one that is best suited to his particular specimen of the machine and he can then stick with that rate. As a guide, pretty well any TRS-80 Model I will go to 1250 baud. Probably 60% or 70% will go to 1500. A small percentage to 1750, and very few to 2000. As we have mentioned, the Video Genie in our experience seldom goes above 750 baud. Before we get a rude letter from our friends at Lowe Electronics, the importers of the Genie, we would like to reiterate that the reason that the Genie does not go to higher baud rates is because of the excellence of the design of the circuitry – not the contrary.

There are three parts to this program. The first permits the loading, saving and verifying of Basic programs at the baud rates mentioned. The second part is exactly the same, but set to one baud rate only, namely 1500 baud. The third part is a very handy idea which will put a loader on to your Basic program that sets the baud rate of the machine to the one selected when the program was saved. To clarify, if one decides that one is going to save a program at say 1250 baud, then this loader option gives the chance of putting in front of the Basic program 255 bytes which will set the computer to the baud rate chosen. It is an ordinary machine language program, so one simply types SYSTEM and LOADER. When the loader is loaded, the user is returned to Basic whereupon he loads his Basic program at the increased baud rate. The addition of the loader to the program is optional, but it does make it awfully handy. All of the programs use the commands SAVE, LOAD and LOAD? in place of CSAVE, CLOAD and CLOAD? Finally, a word of caution. We, as a matter of personal preference, have some reservations on the viability of a program which loads another program. In other words, although one will get increased speed of cassette access, it remains a fact that one is having to load another program in order to get it. If the LOADER option is used, then this, of course, is less meaningful, but it is still present. It should also, in fairness, be stated that unless the LOADER option is used the transportability of high speed programs is a problem.

KEYBOARD MASK – MASK OUT THOSE UNWANTED INPUTS

Keyboard Mask is a subroutine accessed via the Basic USR function. It is, of course, written in machine code and is loaded with the SYSTEM command. The purpose of Keyboard Mask is to provide the programmer with an easy way of making sure that only the required data types are accepted as keyboard inputs. For example, many programs require only numeric input, but the Basic programmer has to code wasteful routines to check that only numeric inputs have been made. The same comments apply to alpha input. The subroutine, therefore, is not only easy to use, but saves a good deal of Basic coding. A mode is also included so that certain control functions can be tested for. The Mask is constructed by way of passing a parameter to the subroutine which, in accordance with the normal Basic practice, is included in parenthesis after the USR statement, thus USR(n). The value of n, therefore, decides the characters which will be accepted in the normal mode. The following categories or combinations of them may be defined for acceptance: Numeric, Decimal, Hexadecimal, Alpha (upper case), Alpha (lower case) Characters. In extended mode, which, it should be emphasised, can be mixed up with normal mode for greater versatility, the following codes are tested for: Left Arrow, Right Arrow, Up Arrow, Down Arrow, Enter, Clear and Break. Keyboard Mask is compatible with disk Basic and disk version is available.

TEXPRO – A TEXT/WORD PROCESSOR PROGRAM FOR TAPE

There is a fairly restricted market for a word processor for tape users of 16K up. It is very difficult to write a good word processor or even a good text editor which will fit into 16K and can support only tape storage. We are now happy to be able to introduce Texpro which is suitable for machines of 16K, 32K and 48K for the TRS-80 Models I and III and the Genie I and II. It is a very nice little word processor and incorporates a number of features that one would expect to see on its bigger brethren. There are different versions for machines with upper/lower case and those with only upper case. There is also a different version for the Model III, so it is important that these details should be mentioned when ordering. Unless otherwise stated, we will be describing the version suitable for an upper/lower case machine. In the main there are no differences in important functions. Texpro incorporates its own lower case drivers, together with its own keyboard and video drivers. Hence it is able to add some special characters, for instance, left and right brace brackets are available together with a vertical divider. The £ is also supported with the screen. The printer support, of course, will depend on the printer used,

indeed this remark applies to most of what we have said on the special characters. Texpro is a menu driven program and 11 functions are available as follows:-

1) Input – This supplies normal typing facilities of course.
2) Edit – The command to be used for insertion and deletion of characters or lines. The cursor is alive and controlled by the four arrow keys.
3) Display – With this command the user reviews the text on the screen with downward scrolling controlled by the down arrow.
4) File – This command stores the current text on cassette.
5) Retrieve – The opposite of the above, to bring text in from cassette.
6) Merge – To rearrange the text in lines of reasonably uniform length. Of particular use after insertions.
7) Tidy – This is the command used to right-justify the text. Only justification by the insertion of spaces is supported.
8) Print – Sends the current text to the line printer.
9) Combine – This retrieves the sequence of segments which have been filed in order on tape and prints them out as one document. This is a particularly useful command for 16K owners.
10) Set – Alters the parameters which control some of the other commands and also the tab settings.
11) Verify – This is an unusual one and is of use to owners with upper case only.

We will now try and explain these commands in a little more detail. When input is called, the last line of the existing text will be displayed at the top of the screen which, of course, is blank on an initial run. Text is then typed in in the normal way. There are one or two exceptions to the normal use of the keys whilst in this command. The Clear acts as a repeat key, the unshifted Left Arrow gives the normal function, but a shifted left arrow will delete the entire line. The Enter key causes the line which has been typed to be stored in memory. The right hand arrow acts as a tab key. Initially the tab positions are set every eighth character across the page, but they can be changed using the Set command. The Edit function gives access to text already typed. Whilst editing is in progress the line being edited is marked by an arrow pointing towards it from the right. The three previous and three following lines are shown above and below respectively with double line spacing. A message is displayed indicating the line number being edited. The cursor is controlled by the arrow keys and any text typed is added at the cursor, the remainder of the line moving to the right to make room for it. Text is deleted by using the shifted left arrow. Changes entered are not immediate, they will not actually be made to the buffer until such time as the Enter key is pressed. Entire lines may be inserted or deleted. The Display is just that; when the command is called it displays the top line of the text, following lines should be displayed using the down arrow key. An interesting phenomena is that scrolling is continuous, that is to say, when the end of the text is reached the next line will contain the beginning of the text. The File and Retrieve commands are self-explanatory. It is interesting to note that text is already on tape in the form of Basic strings. This is, incidentally, a program written in Basic. When recording is in progress, for instance, as each string is written it is displayed on the screen. Visual verification of data tapes is supported. The Merge function arranges the text in lines which are within a specified range of lengths. This is of importance when the lower limit of line content has not been reached and the next word would go beyond the upper limit. When this occurs the user is asked whether or not he wishes to hyphenate. If he does, then he is asked where. If he does not, then the line is terminated at its current length. The most common purpose of this function is to restore regular line length after insertions or deletions have been made. The Tidy command pads out each line to the current maximum length by inserting additional spaces between words and thus achieves right justification. Spaces are added in a "wiping" motion from left to right and then from right to left in alternate lines. The effect is pleasant and means that one does not get the effect of all the spaces being at one end of the line. The Print function is self-explanatory. Word processors are, of course, infamous for printer support problems, one never knows what weird and wonderful printers there are in use until one sells a word processor! All normal parallel printers are supported. In that the program automatically adjusts memory size for its own requirements and obtains the existing top of memory from the appropriate pointer, it is possible for the user to protect memory for serial drivers so long as they are at the top of memory. It is not anticipated that there will be any great problems in this respect with Texpro because essentially it prints by LPRINTing strings. The Combine command works essentially the same as the Print command, except that it prints text as read from tape rather than from memory. The Set command enables the following settings to be changed: Maximum Characters per Line, Minimum Characters per Line, Lines per Page, Page Length, Print Margin, Standard Paragraph Inset, Tab Positions, Hyphenation and a Print option for normal, small and heavy type for which we must again make the stipulation that it may not work on your particular printer. Finally, on the commands, the Verify is one which we have never seen on another word processor. It is appropriate to upper case machines. Many printers will print out lower case even though the Display cannot display it. In these cases it is often difficult to tell from the screen whether a character is going to print out in upper or lower case. The purpose of Verify is that it goes through the text and indicates which are the capital letters.

HONEST JOE – RACING FROM THE OTHER SIDE OF THE FENCE

The author of this program is Mr. K. Campbell. He has written the Fairytale adventures listed elsewhere in the catalogue and also the Creole Lobstercatcher, so it can be seen that he has a broad and imaginative mind and this is certainly brought out in his latest program, Honest Joe. We always get shot down in flames when we say in these columns that we have not seen a program like the one under description; the mail for the next two weeks is full of examples of that program; but we have not seen a similar program to Honest Joe and it is rather fascinating. There are, of course, many programs to do with horse-racing and betting on the gee-gees, but this is literally from the other side of the fence. It can be played by between 1 and 4 players and either the single player or numbers take the part of bookmakers. Each game is made up of four race meetings held at different courses in England, and each meeting consists of 4 races of varying length. Each race has 10 runners of varying stamina competing in each race. In the second and subsequent meetings, new runners may compete, but old runners will appear in different combinations. A runner's stamina, history and the length of the race all have a bearing on the outcome of each race. Essentially the player has to manage a book. He must set the odds, accept the bets and, hopefully, come out ahead. One of the things that help him are reports from major sporting newspapers which are given in respect of each race. Three rather nice examples are:

"A trainer was overheard in the Nag's Head at Doncaster to say that Whizz Kid would not be trying very hard..."

"Over a few pints of Guiness at the Broken Bridle yesterday a stable lad was persuaded to tell our reporter that Maple Leaf was suffering from a dislocated fetlock."

"Patchy has not been seen training recently, and is rumoured to be suffering from equine haemorrhoids."

As we said, Mr. Campbell has a fertile imagination. The racing, incidentally, is on the flat. The sequence of play is that at the start your financial statement is given, together with any tips available. You are then given the stop press news, that is to say, the comments noted above, the race card follows with the 10 horses taking part and their stamina, whether they have run any races previously in the session, the number of races won in the session and the number of times that the horse has been placed second or third in the session. The player enters whatever odds he wishes and random betting is then made by the computer. Everything is then set for the race, and quite a thrilling commentary is displayed on the screen, culminating, of course, in the winner and the placed horses. Details of payout and the amount of cash bet follows after the race and the financial details of how you, as a bookmaker, made out. The amount of cash bet on each race can be regulated by the bookmaker in precisely the same way as an ordinary bookmaker does, namely by restricting or opening the odds. The lower the odds, the lower amount of money your customers will bet. All in all, we feel this is a realistic simulation and good fun to play. Although supplied on cassette, it seems to be compatible with disk Basic.

ASTROBALL – AN OFFSPRING OF PINBALL

Astroball is written by the same author as Pinball which we have carried for some time (see page 33 of the catalogue). We have always been keen on Pinball, thinking it to be the best of the two or three pinballs there are for the TRS-80 and Video Genie, but John Allen seems to have bettered himself. The simulation is still fairly similar, but there are lot more moving targets in Astroball than there are in

Pinball. The excellent simulation of the pulling back of the plunger to start the ball rolling is continued in Astroball, that is to say, the longer you hold down the space bar the more force the ball has when it is launched. The flippers, of course, are retained and they are slightly larger. The speed of play is a lot faster. There are now five skill levels and if you choose the fastest it is very hard to control the ball at all. The scoring is similar to the previous version, but there are now bonus points. If these are earned they are added to the score at the end of the game and if double or triple bonus targets are hit the bonus is doubled or tripled before being added to the score. If you are sufficiently skilful to hit both the double and triple targets then your bonus score is multiplied by six. Space ships move across the screen continuously and if you hit them you will get a bonus of 90 points. There are meteors and asteroids and perhaps most importantly, a black hole into which you can quite easily disappear. Sound is, of course, available. All in all, an extremely good pinball program.

LABELLER – USE LABELS IN BASIC

One of the great drawbacks of Basic is that it is line number orientated. In other words, the only way that one can reference a statement is to reference the line number containing it. The inconvenience of this is obvious, namely that one has to know the line number before constructing a GOSUB or GOTO statement. A lot of people have gone some way to getting over the problem by habitually using the same line numbers for subroutines, but even so no hint as to the content of the subroutine is given by the calling statement. If, for instance, one has a subroutine that carries out some sort of test, then it can be placed in a particular line, and at the end of that line a REM statement can be inserted explaining the purpose. It is far easier if, as in assembly language, one can allocate a label which itself goes some way to describing the purpose of the subroutine. In the example given, for instance, a label simply entitled "test" would give an indication of the purpose of the subroutine if it could be inserted in the calling statement. In other words, instead of the statement GOSUB 2000, one could state GOSUB TEST. A further advantage is that the subroutine line does not have to be allocated when the calling statement is composed. Hence, throughout the program, the statement GOSUB TEST can be inserted with the programmer knowing what he has in mind, but not actually writing the subroutine until some time afterwards. This program permits the use of labels in disk Basic programs. Furthermore, labels can be inserted in existing programs by editing them in. The label reference consists of 1-6 letters or digits, of which the first must be a letter. The label must not contain a Basic keyword. Thus, for instance, LOOP1, LOOP2 are valid references, but NEXT would not be because it is a keyword, nor would DONE because it contains the keyword ON. The label reference may replace any line number following a GOTO, GOSUB, THEN, ELSE or RESUME. A particularly nice feature of the program is that line numbers and label references may be freely mixed. Thus, ON X GOTO TOM, DICK, 2000, HARRY is valid. The program will, incidentally, distinguish between label references and variables having the same format. The label is inserted in the line preceded by @ and followed by a colon. Thus, 5000 @TOM:... is the general syntax. After the program has been written as described above, it is saved to disk and then delabelled by the use of another utility supplied. This goes through the target program, removes the labels and substitutes line numbers. Thus the resulting program is normal, but the user has the advantage of using labels. There are three switches. One will remove all spaces from the program, except those in remarks and quoted strings. The second will remove all remarks unless a line contents only label and a remark, and the third suppresses the output file so that a test run may be made to find any errors before the output file is written. A very useful utility for the busy programmer.

HORACE – A HORSE RACING GRADING METHOD

It is perhaps a sad commentary on the state to which some laws have got into in this country that, because of the various consumer acts, we find it necessary to remind customers that this program is intended as an aid to picking the winners at horse races. In no way do we guarantee that it will work, nor that any user will become the richer because of its application. What it does do is to represent a genuine attempt at cutting an intelligible path through the mass of information presented by the sporting press in the guise of form. Even with this, however, it must be borne in mind that there are literally as many ways of interpreting "form" as there are horses. It is probably fair to say, however, that if this program is used intelligently it will aid in the picking of winners at various horse races, and everything else being equal, a person using it would probably stand more chance of winning than a person who did not. Incidentally, the user will require a copy of either The Sporting Life or The Sporting Chronicle in addition to the software. Racing form, to the average punter, usually involves little more than a cursory glance at their favourite newspaper columnist's selection. Some go a little further and look at the betting forecast. Tipsters very frequently come up with different tips for the same race, so even this method is somewhat unreliable. It is punters who place money on horses on the basis of the foregoing that provide the majority of the income to the bookmakers. At least Horace will aid in a more scientific selection. It is a truism that with or without Horace you can rarely beat a bookmaker, but the use of Horace, combined with caution and intelligence, means that you do stand a better chance of relieving the bookie of other punters' money. What Horace does, essentially, is to remove most of the thinking from you as, perhaps, an inexperienced punter. It will present you with a reasoned assessment of form based on the one factor that most punters ignore, namely value for money. The main points considered by Horace are: –

The type of race	The weight carried then	The odds available
The prize money at stake	The location	When the horse last raced
The state of the going	The distance	The weight carried now
Where the horse last raced		

When the user elects to use Horace as an aid to the selection of his horses, he must understand that he will have to input a large amount of data to be obtained from the newspapers. There is no way round this. It is not practicable to keep the data on file for every horse that has run in England, and in any event, circumstances are entirely different for every horse meeting. Indeed, if these facts were not so, there would be no point in having Horace, nor, for that matter, would there probably be many bookmakers in business, as if it were possible to do what we have suggested, the results of most races would be a foregone conclusion. However, once all of the information is inputted to the program, Horace will project the first three past the post, together with some other rather important information such as the related decimal chance, the value odds acceptable, the betting forecast chance, the expected starting price and the cash class. Horace is an extensive program, but the foregoing should have given some indication of its general purpose. Two versions are supplied, one for the flat and one for the National Hunt. Finally, it must be borne in mind that the form rating projected to Horace is entirely confined to the race under scrutiny. It is purely a measure of the horse's merit in relation to its companions in that particular race.

COP16K – SYSTEM PROGRAM DUPLICATION

We have for some time past stocked a program called COPSYS from Racet. It is described on page 7. Although that program is an extremely good one, it does suffer from one great drawback in that because it occupies memory itself, it can only duplicate machine language programs to about 14½K. This program essentially carries out all of the features of COPSYS with the addition of one or two functions including the ability to copy a full 16K. Additionally COP16K will copy non system format tapes which include EDTASM source tapes, Basic programs, Basic data tapes and non system machine code tapes including many with trick loaders. COP16K allows for the choice between cassettes 1 and 2 so it is of increased value to the Video Genie owner. The program is menu driven as follows: –

1) Toggle Cassette

   The program starts with cassette no. 1 selected. The cassettes may be toggled, that is to say, alternatively selected with this command.

2) Load System Tape

   This is self-explanatory. When the load is successful the file name of the tape will be displayed on the screen and the user is also asked whether or not additional tapes are to be loaded. It is therefore possible to join together any number of utilities which the user wishes to load into memory at the same time in a single load. Tape loading and checksum errors are carried out during the load.

3) Load any 500 Baud Tape

Again this is self-explanatory. No checksum is taken in this mode for the tape may not contain one. If the user feels that he is getting a bad load then the tape can be switched off and COP16K will assume that the data is finished and will automatically return to the menu as it does after each non system load.

4) Verify Buffer Tape

This command can be used to verify both loads and writes. This option verifies according to the format of the program in the buffer.

5) Write Buffer to Tape

With this command the contents of the buffer are written to tape in the same format in which it was loaded.

6) Jump to 16K Duplication

For most applications of loading system tapes the second command listed above will carry out all that is needed. Occasionally, however, one comes up against a tape which occupies the full amount of memory and it is for this type of software that this command was included. Most long machine code programs will write over the facilities of this command, thus there is no return to the main menu. When this option is selected a mini menu is displayed consisting of four commands, Load, Verify, Write and Basic. The first loads a system format tape into memory. When loading is completed the user is returned to the mini menu. Checksum and tape load errors are checked. If one is encountered the appropriate error message is displayed. The Verify and Write commands are self-explanatory and the final command of the mini menu, Basic, returns the user to a cold system boot. This program is for 16K TRS-80 or Genie owners only.

SAUCE – A DISASSEMBLER FOR THE MODEL II

This is a full feature Disassembler intended to complement Edit-80 and Macro-80 originally written by Microsoft, but published by them and by Tandy under various names and in various packages. Sauce can be used to disassemble any program, that is to say, non system file, and will produce a source file on disk which is compatible with Edit-80 source files. The purpose of this compatability is to enable a user to disassemble a program that does not exactly fit his needs, adapt it as necessary and then re-assemble. Sauce has an extremely full range of commands and is extremely versatile. Any part of the target program can be listed to the screen or to the printer. The user may also jump to examine any part of the program. Two further user convenience commands are the ability to clear the screen without, of course, losing the program heading, and a function to send a form feed to the printer. There are commands to enter labels into the program and to determine whether an area should be disassembled as Z80 instructions or as DB, DW or DS expressions. The labels or controls already used may be examined by dumping them to the screen or to the printer and even comments can be added to the program. This is particularly useful when one is examining a program and discovers what a particular section of it is used for. Editing, in other words, deletion, of labels, controls and comments is permitted. A search command allows the search for a hex string in the target program and lists such addresses to the screen. Two particularly powerful features of the Disassembler are firstly its ability to determine the DB expression areas in the target program itself, and secondly the automatic allocation of labels, in other words, a two pass Disassembler. In addition to being able to save a disassembled file, the user may also save the "State" of the Disassembler at any time. This has particular application when investigating a long program because it enables the user to carry out his disassembly or investigation in more than one session. The Disassembler display is, we feel, particularly good for this type of utility. An example is given below.

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→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→
→ SAUCE Disassembler Program Version 1.0                        July 1981  →
→                                                                          →
→Program  : 3000-4124   Controls : A000-A120   Program Counter  : 301C     →
→Symbols  : 8000-8201   Comments : B000-B312   Transfer Address : 3344     →
→--------------------------------------------------------------------------→
→*P3000                                                                    →
→       LD     (40EBH),SP                ;3000     ED 73 EB 40    .s.@     →
→       LD     SP,426EH                  ;3004     31 6E 42       1nB      →
→       LD     HL,-1                     ;3007     21 FF FF       !..      →
→       LD     (0A000H),HL               ;300A     22 00 A0       "..      →
→       LD     (8000H),HL                ;300D     22 00 80       "..      →
→       LD     (0B000H),HL               ;3010     22 00 B0       "..      →
→       LD     A,'I'                     ;3013     3E 49          >I       →
→       LD     (9FFFH),A                 ;3015     32 FF 9F       2..      →
→       LD     IX,8000H                  ;3018     DD 21 00 80    .!..     →
→*                                                                         →
→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→→
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The title is shown in reverse video and, as you can see, contains the current program information. In this case you can see that the target program appears to be stored at 3000 hex to 4124 hex. In this case no offset is necessary as the program is actually stored at 3000 hex anyway. You can see that some controls, symbols and comments have been entered, but that none of these are in danger of overflowing their respective areas. Having listed the short section of the program, the program counter is now set to the start of the next line, which starts at 310C hex. The transfer address for the program is at 3344 hex.

DIFFERENTIAL EQUATIONS – DIFFERENTIAL EQUATIONS WITHOUT TEARS

Elsewhere in this catalogue you will see described a program called Tables written by Mr. J. M. Heath. That piece of software adopted a free and easy attitude towards teaching young children their mathematical tables. Mr. Heath has now directed his talents for writing highly interactive programs to the problem of differential equations. These mathematical equations rear their heads in a surprising number of different professions and walks of life. Indeed, in describing that, we have used the word "different" and that is the difference between matters that give us cause to use differential equations. Extremely accurate numerical methods of solving differential equations are available, but they are relatively unknown to the general populace. It is in number crunching, however, that a computer shows its real qualities and full advantage has been taken of this in the composition of this program. Moreover an extensive manual is supplied with it, again written in Mr. Heath's friendly style. Obviously the purpose of the program is to solve differential equations and to teach people how to do so in the most painless way possible. The program will handle up to six first-order equations in six variables. Almost any practical problem which comes up is already such a system or can be reduced to a system of this sort. For those customers who are acquainted with mathematics, at the core of the program is a fourth order Runge-Kutta method. The global accuracy of this method is remarkable. The accumulated error is roughly proportional to the fourth power of the integration step size, far superior, so the author tells us, to the modified EULER method. Apparently the Runge-Kutta iteration is used extensively in numerical analysis programs available on main frame computers. The only criticism we have of the program is the method of inputting some data. Although this is properly and completely prompted in the program, nonetheless it is necessary to edit some lines in order to enter the details of your equations. We do not wish to overplay this, it is fully explained in the manual, it is easy to carry out and may have one advantage in that when one has to enter data in this way, perhaps one is thinking a bit more solidly about it than when using other methods. The manual, after an introduction, takes the user through the use of the program, discusses the number of equations and how they are entered in. Initial values are discussed fully. If the user is in any doubt after reading this section, there follows an exhaustive illustration of a sample program session including some general tips. A final section covers further hints and tips with boundary value problems, solutions over long ranges of the variable 't', printing the results for more than three variables and saving equations to disk. A provision is made for the output of a graph of the results and a line printer is supported throughout.

V3.1 available June '84

Also Model 4 (p176)

SYSTEM DIAGNOSTIC – A COMPLETE TEST FOR MODELS I AND III TRS-80 (V3.0)

This is a major new program from Hubert S. Howe, the author of the Monitors which we stock and also the book, "Machine Language Programming from the Ground Up". It should be differentiated from his previous Diagnostic which merely tested RAM, to some extent the Video drivers, and ROM. When he named this program System Diagnostic he meant exactly that, the whole system of either of the two computers mentioned are tested in a rigorous manner. The program is, to some extent, compatible with the Video Genie both Models I and II. There will, however, be some obvious differences. Whenever these come to light we will add an addendum to the manual for the program. Video Genie owners should order the Model I version of course.
The individual tests carried out by System Diagnostic are as follows: –

ROM

System Diagnostic does a normal ROM check, that is to say, it goes through the entire ROM and carries out a checksum. If this checksum corresponds to those known for the machine in question then that particular specimen of the machine passes the test. The ROM check is very fast and only takes a split second to complete.

RAM

There are three RAM tests in the Model III version of System Diagnostic and four in the Model I. The three which apply to both are as follows: –

1) Non Destructive Test

   This test checks location in memory, but restores it to its previous value before continuing, so it does not destroy the contents of programs or data which may be stored there. The non destructive test provides the only method of checking low RAM, below the program itself, where system pointers and other important values are stored. This test runs very fast and should finish in only a few seconds unless errors are encountered. Any major errors due to a defective RAM chip will be discovered in this way, but intermittent errors, which may happen occasionally, but not always, may not show up whilst the test is in progress.

2) Complete Test

   The complete test stores each possible byte value from 0 to 255 in memory, waits, and then tests it to check for the correct value. This test is only carried out for high RAM, that is to say, from the end of the program to the end of your memory, as the previous contents of the memory cell are lost. Each value currently being tested is displayed on the video display and running the complete test from start to finish takes several minutes. As mentioned, this test will destroy the previous contents of memory, and as this Diagnostic is also capable of testing the printer, as we shall see in a minute, the user may require to have resident in high memory a driver for the printer. Consequently the provision is made whereby a lower memory value than is actually resident can be specified for the test so that the driver or whatever is stored in the memory above that stipulated, will not be damaged.

3) Refresh Test

   This test checks the TRS-80's capability of properly refreshing the data stored in dynamic RAM. Although it is not necessary for the average user to understand this particular test, it may be advantageous to quickly explain the reason for it. There are two practical types of memory integrated circuits used in microcomputers. They are called either Static RAM or Dynamic RAM. The latter are cheaper for the equipment manufacturer to buy than the former. The actual memory cell may be considered to be a two way switch which can be either "on" or "off". Most cells consist of what is called a flip-flop which is an electronic circuit, the output of which is either in a high or a low state depending on the setting of the flip-flop. The point is that in Static RAM, once the flip-flop is triggered it will change state and stay there without any outside intervention at all, until a new data pulse comes along. The Dynamic RAM, on the other hand, will not, unless it receives what is called a refresh pulse from the CPU. Consider the dynamic memory cell as an infinitely small battery which has to be charged (refreshed) every so often to maintain its voltage level (data). The Z80 CPU used with the microcomputer is well adapted to Dynamic RAM because it generates a refresh pulse itself. If this refresh pulse does not come along to the Dynamic RAM within a certain specified period, then unpredictable results can occur, including the loss of data. As previously stated, this test checks the machine's capability of properly refreshing the data stored in the Dynamic RAM. So far as is known, System Diagnostic is the only program which carries out this test.

The one test on RAM that is available in the Model I version of the program that is not available in the Model III is what Hubert Howe has called the "Glitch" test. Again this is thought to be an entirely new type of test for TRS-80 Diagnostics. It takes a checksum of your RAM and then runs through a series of operations that simulates the starting and stopping of other peripheral devices. At the end it repeats the checksum to see if it is the same as before. If not, then an error is indicated. If this test is run whilst household appliances or other outside electrical equipment is being run then the user should be able to see the effect of this equipment on the machine. If the test fails it is fairly certain that the equipment in question is causing transient spikes which will affect your computer. Both the Glitch and Refresh Test require an Expansion Interface.

Video Display

This test consists of the following checks: –

1) Character Generator Test

   The character generator test prints all available characters on the video display, including, in the case of the Model III, the special character set. The first four lines display the print characters, the next two lines the graphic characters and the last two lines the special characters. They can be inspected by the user and if any character is not correct or is missing a dot or whatever, then the video character generator in the TRS-80 is probably defective. The alternative character set in the Model III – the Japanese Kana character set – can be displayed by returning to Basic, carrying out a command and going back to DOS for the Diagnostic.

2) Video RAM

   The video RAM test very rapidly fills the screen with each possible character that can be displayed on the TRS-80 and then checks it for accuracy. This procedure tests the accuracy of each character in each position of the video display. If there is no problem then the test immediately goes on to the next value, completing the entire test in about five seconds. If there is an error a message is displayed and the computer waits for about a second and a half before going on to the next value. This is so that the user can scrutinise the incorrect values and see what is wrong.

3) Video Signal Test

   The video signal test fills the entire screen with a graphic block. This display should have fairly straight edges, there should be no bending or wobbling of the sides. If the two vertical edges are not straight or weave back and forth, it will indicate some sort of problem, possibly transient line voltage problems. Large distortions of the edges could indicate a serious problem with the video opto isolator board.

Keyboard

The operator will have to assist the computer in carrying out this test by pressing down each key as instructed and holding it down as long as the test remains in effect. This procedure will test the leads from each key on the keyboard to the proper location in keyboard memory. The process of holding down the key tests for intermittent failures which will be observed if the contacts are partially shorted. This test also checks the keyboard memory.

Line Printer

The line printer test is similar to the video character generator test. It prints a line of 64 characters of each of the 95 legitimate ASCII characters in the character set of most line printers. The characters that will be printed are the same and in the same order as with the video character generator test. It produces special characters, numerals, upper case letters, lower case letters with additional special characters at the end of each group. The operator visually inspects the results of the test for errors.

Cassette Recorder Test

There are two cassette tests, one for writing and one for reading cassette tapes. In the Model III the user is given the option to choose high or low speed. The write test creates 16 blocks of data, each containing every possible byte value. These are written to the cassette, preceded by the leader and sync bytes. Writing takes about one minute and fifteen seconds and it may be repeated several times on a single cassette in order to check the reliability of the cassette. The read test, of course, reads back the cassette created by the write test and verifies it. One by-product of these tests is to discover the operating range of your cassette recorder. The tests can be repeated at different volume levels until an optimum level is achieved. Another application of this test is to check the actual media itself for drop-outs in the recording level. Obviously it would be too time consuming to carry out this test on every cassette that one is going to use, but it may be well worth while to carry it out on cassettes which are going to be used for critical applications.

Disk Drive

The disk drive tests are particularly thorough and perform all of the important tests that can be carried out on disk drives short of taking the drive itself apart. There are seven different types of test as described later. The manual which is supplied with this program is some 28 pages long and about 8 of them are taken up with a fairly in-depth explanation of how the disk drives and their controller operate. A lot of information is taken from Dr. Howe's book, but Model III customers will be particularly interested in this section as very little information has been available to date on the disk operation of the Model III. Customers owning Model III's may well consider that this information is a very important plus when considering whether or not to purchase the program.

1) Drive Select and Disk Controller Functions

   This test is designed to check the functions of a disk drive except for the reading and writing data. It should be the first test attempted on a drive whose operation is suspect. Firstly, the drive is selected and a restore operation performed. The status register is checked for various conditions and step in and step out operations are performed.

2) Track Seek and Verify Read

   The track seek and verify read test reads and displays the contents of every track and sector on the diskette. Following the disk start up test, a seek command is issued for track 0 sector 0. Each time a track is located, all sectors are read and displayed in order. This test permits stepping rates from 3-15 m/s. This may cause problems and a failure of the test with some Teac Model III drives which are set to 30 m/s. Only 35 and 40 track drives, incidentally, are supported on all disk tests, although this is not necessarily any great problem. The 256 bytes read from each sector are displayed in ASCII code along the bottom area of the video display. During this test many different kinds of errors are checked, but not all of them will result in termination of the test. Seek errors, CRC errors and lost data errors are simply counted and a running total is displayed if they occur. More serious errors such as track not found or drive not ready will cause the test to be aborted. If you specify a seek time faster than your disk drive can tolerate, as, for instance, may occur on some Teac drives at 15 m/s, you will get some of the errors mentioned above. Actually this test is quite a good way to discover the limitations of your disk drive.

3) Formatting

   The formatting test is designed to allow you to discover the formatting characteristics of a particular diskette. Since it uses the read track command to read an entire track of data at a time, it can handle non-standard diskettes. A Model III version of the program will only handle double density diskettes, whereas a Model I will only handle single density. The formatting test reads each track from the diskette in order and displays the following information read from the ID field: track number, sector number, sector length and checksum bytes. The data bytes themselves are skipped, but the DAM (Data Address Mark) and data block checksum are displayed.

4) Read/Write/Verify all Sectors

   This test is self-explanatory. It writes then reads and compares each sector of the diskette with a byte pattern.

5) Read/Write/Verify without Erasing

   This is similar to the above test except that the contents of the diskette are not destroyed in the process.

6) Disk Drive Timer

   This is one of the most important general maintenance diagnostics that can be performed on your disk drives and again as far as is known, with the exception of one particular dedicated program from Racet which only tested certain types of drives, this program contains the only known test for this possible malfunction. The speed at which the diskette turns within the drive is supposed to be 300 revolutions per minute. Variations of up to 1.5% are acceptable, but above that limit errors may well begin to occur. This test will tell you the exact speed of any particualr disk drive in RPM. The formatted diskette is inserted into the disk drive and the Enter key is depressed. The speed is then displayed and continuously updated as the diskette turns. The display is given both in numerical and graphic form.

7) Disk Head Cleaner

   This test merely activates the drives. The operator has to supply the diskette cleaner and fluid. Normally when one cleans one's drives it is necessary to fool the drives into doing something, usually by calling a directory. This test merely takes the place of this subterfuge.

RS-232-C Interface Tests

These tests are slightly different with the Model I and Model III. The principal difference is that with the Model III version there is an option to initialise the interface with the usual parameters, baud rate, word lengths, parity etc. These, of course, on the Model I, are set with dip switches. The following tests, however, are common to both models.

1) Connector Test

   One of the bugs of the RS-232, particularly on the Model I, is the connector between the interface board and the main board. This test will check all connections.

2) Transmit Data Test

   This test initialises the UART and then attempts to transmit data. If the UART status register indicates that the data was received, the test passes. If not, the test continues to attempt transmission.

3) Framing Test

   The framing test is a check of the relation between the stop bits and the data bits. A framing error indicates that a spacing error was detected when the stop bit period should have been occurring.

4) Data Loop Test

This test continually sends a stream of data to the RS-232. The verification is accomplished by visually inspecting the data which will be echoed by the video display when accepted by the output of the UART.

5) Baud Rate Generator Test

This test resets the baud rate generator at each of the 8 most commonly used baud rates.

One of the most important features of this program is that it has the ability to run the above tests continuously. As many of you will know, probably the most frustrating occurrences with a microcomputer is what is called an intermittent fault, that is to say a fault of whatever nature, that occurs only at certain times, whether that time is set up by outside influences or not. Probably the most common occurrence of an intermittent fault is when it is related to the temperature of the equipment, that is to say, how long the machine has been switched on. The ability to continuously test in cyclical fashion without user intervention can show these faults up quite conveniently. The keyboard, line printer and cassette tests are not included in the continuous test for obvious reasons. The program is, as is obvious from the above, compatible from either cassette or disk machines. As a matter of expendiency it is distributed on a 500 baud cassette, although customers preferring to pay the disking charge may, of course, do so. Model I and Model III versions are different so the model used must be stipulated.

New versions of System Diagnostic support double density and 80 track disks. It also has some small improvements over the above description, particularly in the area of speed.

HEXSPELL – A WORD PROCESSING DICTIONARY

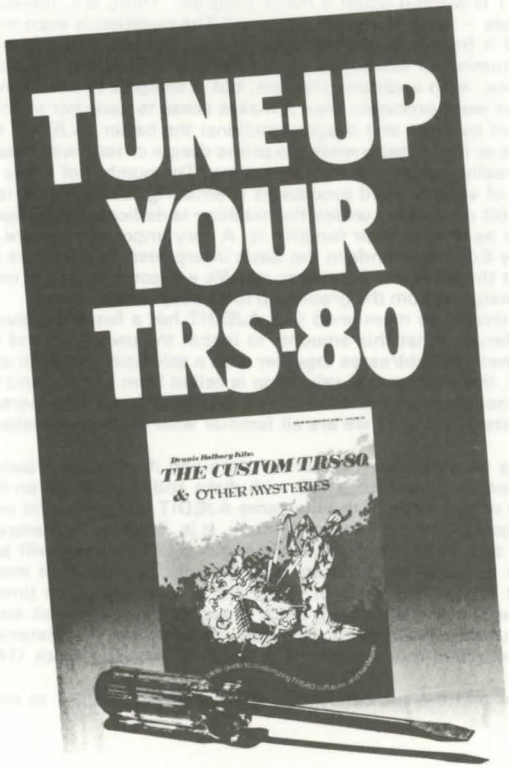
Now that word processors are becoming so widely used, a system whereby the spelling of letters and documents can be automatically checked is well nigh an essential item. It has been proved time and time again that the author or the typist of a long and possibly complex document can search that document many times with their eyes and still not see the most obvious mistake. Hexspell is compatible with all word processing systems of which we are aware, including Scripsit, Electric Pencil and AJEDIT. The latter is a new word processor described in this listing. Essentially the program goes through any file produced by the word processor and checks each word against a self-contained dictionary. In the case of Hexspell, this dictionary consists of about 23,000 words in store on disk and another 6,000 words continuously held in the computer memory for fast access. A very nice feature of the software is that the most commonly used words of any particular user are continually ''sifted'' towards the top of the list and hence put into memory on power up. In other words, the program learns which words are used most commonly by any particular operator and makes sure that these are in a faster access area. The program can, of course, be instructed to learn words and such words will be added to the dictionary. When the program is first fired up it asks for the name of the document file and when this is provided it asks for the name of a work file to be used. The program now queries whether or not the user wishes to check words containing upper case. Usually, of course, the answer to this is in the negative because most words containing upper case are names containing just the first letter as a capital. Each sentence also starts with a capital, so by ignoring the upper case the amount of checking is considerably reduced. The program will now continue by starting to check the actual text. This is scrolled from the bottom of the screen upwards at a fast reading rate. This is a particularly important point in the context of the capitals being ignored. Any capital letters stand out, of course, so the person supervising the run can check these visually as the script goes by. When an unknown or mis-spelt word is found the program will stop, the word will be shown on the screen together with continuation words that follow the word in question. Again this is quite an important point as it gives the context of the phrase which sometimes has a bearing on the actual spelling of the word. The user may now either replace the word, in other words, correct the error, leave it as it is, or instruct the program to learn the word for future use. When the choice is made the instruction is fulfilled and the program goes on to the next word that will cause it to stop. One of the concerns with this type of program is the small differences in American and English spelling. With Hexspell this is not a difficulty, partly because there are not so many because it was written by a Canadian, but mainly because words can be deleted from the dictionary and new ones added. Thus if there is any spelling which is not as the user likes it, that word can be deleted and a word spelt as he wishes it inserted. A utility is added to Hexspell which will clear the dictionary of all words. It is not likely that this will be used often, but it may be of use to people who wish to construct their own dictionary say in a foreign language or a particular profession. A new version of Hexspell has been issued by Hexagon Systems which contains a major enhancement. This is the addition of a control file which enables the user to customise Hexspell 2 to his own particular requirements, in particular he can define the meaning of a ''word'' in the context of his business or profession to include such things as part numbers, product codes or even formulae. So far as is known, Hexspell 2 is the first dictionary program on any microcomputer to include this powerful feature.

BLACKJACK MASTER – A SIMULATOR/TUTOR/GAME

The first thing to emphasise about this program is that although it does contain a program to play Blackjack with you, it is not simply a game. It is an in-depth study of the strategies of playing Blackjack (or, if you prefer, Pontoon). Many claims have been made purporting that this or that strategy in the playing of the game is the best. Whether there is such a beast is of some doubt, but if there is a best one, how does the average Blackjack player, or indeed an expert Blackjack player, evaluate the various strategies and make a reasonable decision on the best strategy for him? First of all, the serious player must decide on which strategy is best for him and then (if he didn't have a computer) go along to the casino and probably lose an awful lot of money to find it is not the best strategy. A computer is ideally suited to a task such as evaluating a strategy. It can ''play'' millions of hands and extract therefrom the best.
The program consists of three separate, yet interrelated components for learning, developing and playing various strategies. The first of these components is the simulator. Its function is to ''simulate'' the playing and betting strategies that you enter into the computer and then record the results for future analysis. The simulator is a table-driven processor whose main input is from five playing strategy tables and four betting strategy tables. Since table-driven programs are easy to modify, the logic of the program never has to change, just the table values. The second component is the tutor. Its function is to let you practice the strategies you designed during simulation. This program is also table driven and uses strategy tables to evaluate your decision for a hand combination. The third component is the game module. It plays a total Blackjack game incorporating every facet of the casino game including hitting, doubling, splitting, betting, insurance and surrendering. The game module deals the cards, verifies player's decisions, manages player's money, plays the dealer hand according to casino rules and controls the graphic game display. This component does not require external decision input and, therefore, driver tables are not required. All logic is performed internally and does not interface to any other component.
If you wish to study the game of Blackjack, whether or not you are going to put it into practice, then this is an excellent program for you.

NAPOLEON – A WAR GAME WITHOUT JOSEPHINE

We are often taken to task over the amount of space that we give to the description of a program. Some customers seem to be firmly of the opinion that if we give little space we have not considered the program or think little of it. We would like to emphasise again that this is not necessarily so. Human nature being what it is, it is probably true on some occasions, but some programs such as this really require very little explanation. After all, once you have said that the program is a war game, apart from describing the scenario, there is very little that can be written about it. So to get on with this particular program, Napoleon is a war game that takes place in Europe with the starting date of June 1798. You are playing the part of the Emperor Napoleon of France and you have at your disposal six French armies. With these armies you are expected to conquer the whole of Europe. The computer, of course, will control the moving, finances etc. of the allied armies which consist of Austria, Britain, Prussia, Russia, Spain and Portugal. The player has until the end of 1815 to complete his task. Whenever an army is below 1,000 men strong, it ceases to exist. The British armies start off from either Iberia or Prussia, the other allies start from their respective countries. The graphics, with the map of Europe, are of good quality and there is very little else to say, except that it might be mentioned that it is written by Simon Ford and not Dr. Bodley-Scott so undoubtedly it has a fresh approach to computer war games. The program appears to be compatible with disk Basic.



You may have seen the two advertisements above in the American magazines. They are, of course, the next two books in the "Other Mysteries" series. The first two were "TRS-80 Basic and Other Mysteries" and "Microsoft Basic Decoded and Other Mysteries" which are shown elsewhere in this catalogue. In typical American fashion the Custom TRS-80 book was advertised first, but will not be available until late November. The "Basic Faster and Better" is now in stock. Although we have only had the book in stock a few days as this listing is being prepared, we have found it to be one of the most informative books on the "non-standard" use of Basic that we have seen. The book is made up of hundreds of hints and tips, the majority of which are supported by short subroutines. The majority of these subroutines are in Basic, but some are in assembly code. It is really rather hard to describe the book because what it sets out to do, and succeeds in doing, is to enable an average user to get far better application out of his Basic Interpreter. If you are curious about all of those little known facts of Basic and in particular the Basic Interpreter utilised in the TRS-80 and Video Genie, then Basic Faster and Better will prove to be a veritable goldmine to you. As a matter of fact the subroutines listed in the book are so good that they have been amalgamated onto two disks. At the moment we are not stocking these because they are moderately expensive with the dollar as high as it is at the moment and we feel that customers may prefer to enter them direct from the book. If, however, we get enough call, we will stock them. Although the book is arranged in chapters, of course, it tends to cover quite a lot of area and it is literally impossible to describe its contents completely. If one had to sum it up, then, I suppose, the best way to describe it is that it is 288 pages of Hints and Tips. An extract from the contents pages is shown below which should give some indication.

AJEDIT – A NEW, SIMPLE TO USE, MODERATELY PRICED, WORD PROCESSOR

The introduction of a brand new word processor is a major event and AJEDIT is without doubt a major program. There are, however, quite a few Word Processors around and most of them are extremely good ones – why, therefore, another? The question is even more pertinent when it is known that we specifically commissioned the writing of it from an author of the status of Denville Longhurst of Enhanced Basic fame. The answer is that user feedback shows that a large number of customers do not need or want word processor programs which require a quantity of training before use. Scripsit, for instance, is an excellent program, but is complex to use; it even comes with a training course on tape. If one operator is dedicated to using the word processor then it makes sense to have her trained, and the more complex the program (so long as the complexity is accompanied by more and bigger functions) the better. AJEDIT has been written for the user who needs a word processor intermittently, say three or four times a week. Its prime design criteria was ease of use – and just as importantly – ease of recollection of its commands which really amounts to the same thing. The number of times we hear from customers that they have difficulty in recollecting the commands of various word processors is amazing. Certainly Scripsit goes some way towards it by supplying labels for the keys, but then this is a bit off-putting unless the machine is dedicated to Scripsit. Throughout the program the commands at least give a hint from their syntax as to what their function is. A very important feature, at least in our eyes, is that the Edit commands of AJEDIT follow very closely the Edit commands in the Basic interpreter, to which we are all so used. Thus, the command to insert is an I, to delete, D, and to take out three letters, 3D and so on. We will come to this in more detail later on. The point to be emphasised at this stage is that AJEDIT was designed from the ground up to be easy to use.

Before we go into more normal word processor commands and functions, it should be mentioned that AJEDIT has a feature included which is not normally found in word processors, that is the ability to Mail/Merge. What this amounts to is that the user can send out personalised letters or forms. Two files are maintained, one with a list of names and addresses together with a salutation for each one, the other with the form letter. When the operator comes to use this function, the address and salutation is called from one file and the standard letter is added to it. A labelling feature is also included. In this way not only can the letter start automatically with the personalised name of the addressee, but also this can be added in the text of the letter. I am sure we are all familiar with these personalised, yet stereotyped, letters.

We will try and discuss AJEDIT in a reasonably chronological order, but it is an extensive piece of software and if we jump around a little we will have to be forgiven. To start at the beginning, AJEDIT is, of course, only compatible with disks and is supplied on that media. It is executed, as it is a machine language program, from DOS in one of two ways. If the file name AJEDIT is typed on its own, then the program will be loaded and executed by issuing the title page and going into the Command mode. It is, however, a feature of AJEDIT that one can, at the same time as loading the program itself, load a text file. Thus the command AJEDIT filespec will load AJEDIT and then load the text file reflected in the name of the filespec. In this case the program goes straight into the Edit mode. AJEDIT may be considered to have three modes, Command, Edit and Text Entry. The mode in which one is in at any given time is clearly shown by the type of cursor displayed. Whilst in Command mode, the cursor is a flashing block preceded by an asterisk and a greater than sign. Whilst in Edit mode, a graphic character is used. It is usually the graphic character shown when the statement CHR$(186) is issued. This is quite distinctive and cannot be missed. The Insertion mode cursor is a flashing character block (143). Needless to say, movement between the three modes is extremely easy.

Cursor movement is, of course, of the utmost importance in a word processor and the sub-commands appropriate in AJEDIT to move the cursor are as follows: –

SPACE	– One place to the right
RIGHT ARROW	– One word to the right
LEFT ARROW	– One place to the left
DOWN ARROW	– To start of next line
UP ARROW	– To start of preceding line
SHIFT LEFT ARROW	– To start of line
T	– To start of line at the top of the screen
B	– To start of line at the bottom of the screen
#	– Displays the first sixteen lines of text
*	– Displays the last line of text
P	– Displays the next sixteen lines
O	– Displays the preceding sixteen lines
F$	– Searches text to find occurrence of string $
F	– Searches text for next occurrence of string $

The sub-commands which edit the text will now be listed, but first we should mention that the Line Overflow feature becomes active when entering text, that is to say, a word which will not fit completely into the space remaining at the end of the line is automatically transferred to the start of the next new line.

ENTER	– Insert a new line of text following the current line
@	– Insert a new line of text preceding the current line
nC	– Change n characters (default n = 1)
nD	– Delete n characters
H	– Hack and insert
I	– Insert
K	– Kill (i.e. delete completely) text to the right of the cursor
nR	– Replace n characters. This actually does an nD then goes to I
Sch	– Search the line for the next occurrence of character ch
X	– Move the cursor to the end of the line to add more text
Z	– Improves intra-line text addition. Wraparound is not supported with the I command as it is essentially a command from the interpreter, hence Z has been added which supplies a synthetic wraparound when inserting.

Note how closely the commands listed above, with the exception of the second one, follow the normal Edit commands of the interpreter. Assuming a person has used Basic before, he could immediately go into AJEDIT and start using the Edit commands.

There are a few special sub-commands of some importance. For instance, it is possible to transfer a stipulated number of lines of text to a special buffer for subsequent recall. When recalling, these lines are inserted following the current line. In other words, a type of scratch pad memory of lines of text. One of the principal design criteria was to incorporate into AJEDIT a degree of "What you see is what you get". In other words, what you see on the screen is what you will get on the printer. It is, of course, impossible to do this completely because, amongst other things, the screen has 64 columns whereas even the smaller printers will have 80. Nonetheless, it was considered of some importance that the screen should always give a tidy appearance, particularly when displaying text, and accordingly a screen justification feature is incorporated. This is optional. It may be switched "on" or "off" at will, but when "on", as the cursor reaches the end of a line and goes to the next, normally, of course, in the middle of a word, then it will carry that word over to the next line and automatically justify the preceding line. It should be emphasised that unless the screen column width is set to 64, then this screen justification feature is merely a convenience for the operator. So that there can be no misunderstanding, when using this feature it is also possible to change a justified line into an unjustified line and vice-versa. It is typical of these commands that they use easily recognisable initials. For instance, justification of the screen is turned on by the letter J and normal listing is turned on with the letter L. The Command mode, which we will consider next, is called with the /. Even this has some logic in that one is going from Insertion/Command.

The principal purpose of the Command mode is to transfer text between the editor and text files saved on disk. Assuming that the program is called less automatic text loading, it is the mode into which you will be put when you enter the program. All commands are terminated with the Enter key which is very convenient in use. We keep on emphasising the ease of remembering AJEDIT's commands and we are about to mention another one. If you have no command then it is extremely logical to enter nothing, but just to hit the Enter

key. If one does this, then the effect is to return the user to the Edit mode — in other words, "I have no more commands, let's go back"! There are a number of dedicated commands which we will list in a minute. If these are not used, then whatever is typed in is interpreted by AJEDIT as a DOS command. It will then go back to DOS, execute the command and return WITH THE BUFFER INTACT. Thus, typing from Command mode DIR causes the program to display the directory of drive 0. Typing FREE will tell you how many free granules you have on drive 0. KILL will kill any specified file. So far as we can see, most commands in DOS will work, particularly the important ones. DIRCHECK, for instance, if one is using NEWDOS, works fine, so it can be taken that almost all DOS commands, except the exotic ones such as DEBUG, will work, even though it is only really the ones appropriate to the directory that one is concerned with when using a word processor. The dedicated commands are as follows: —

L filespec	Loads a text file named filespec. The buffer must be empty before this command is used. If, in fact, it has any contents, the command will be ignored, hence it is not possible to overwrite or erase important data.
A filespec	The text file named filespec is appended to the text already in the text buffer. Control is transferred to the Edit mode.
W	The contents of the text buffer are written back to the disk file named in the L command. This is, of course, used to update the disk file and should not be confused with the next command.
C filespec	The contents of the text buffer are copied to the disk file named in the filespec. This is used to make copies of text and to save new text. It has to be used also to write back a file after the A command has been used.

Of the above four commands, the first two give a return to the Edit mode and the last two to the Command mode.

M	Displays the amount of free memory left in the buffer.
E	Exits, but does a W command first, thus saving the edited text back to disk. The exit is to DOS of course. The automatic calling of the W command means that it is virtually impossible to lose text.
Q	Quit editing, forget all changes and exit to DOS.
X	Allows the text to specify the next program to be run under DOS. The X command first does a W command (just like Exit) then before exiting to DOS the first line in the text buffer is sampled. If that line has as its first characters two non alphanumeric characters (e.g. ::) followed by an asterisk and a space, then the remainder of the line is taken to be a DOS command. The purpose of this command may be obscure in the context of the way in which we have been considering AJEDIT, namely as a word processor. It does, however, have another application in which the X command is important. We will discuss that at the end of this list.
Y	This command is used to tidy up the text in the buffer. After an editing session the text, as displayed on the screen, may look a little untidy. The Y command will tidy things up. As was stated for the screen justification command, it should be emphasised that the Y command only affects the way that text is displayed in the Edit mode. Text is always sent to the printer properly formatted.
N	New. This clears the text buffer completely.
P	This sends formatted text to the printer and to the display. The P command may be disconnected from the printer by adding .NP. This will turn off the output to the printer so that the P command will now send text to the display only. The converse command, .YP, will re-enable output to the printer. As we have not said it for a little while, once again note the use of the initials, .NP = no printer, .YP = yes printer.

We have mentioned that the / key is the method of going from Edit to Command modes; we did not mention that it may be followed by another command. Thus, for instance, / DIR will enter the Command mode and execute a directory command to DOS. To revert to the X command, we were saying that in certain circumstances part of the first line of the text may specify the next program to be run under DOS. AJEDIT may be used to write source files for Microsoft's Macro Assembler, which is also distributed by Tandy, and without the X command it would be necessary to go through the following sequence: E to save the source file back to disk and exit to DOS, then from DOS call the Macro Assembler with that software's rather unwieldy command line M80,EDIT/REL,EDIT/LST = EDIT/MAC. Obviously when this is done time and time again it becomes both tedious and annoying. If the source text of AJEDIT has as its first line the M80 command listed above, but preceded by two colons, an asterisk and a space, then simply using the command X will save the source file, exit to DOS and run the Assembler, fully utilising the command line feature which that Assembler supports. Note the rather crafty way of using the double semi-colon as a delimiter. Assemblers ignore lines starting with a colon thinking they are comment lines.

We will now turn to the text formatter part of AJEDIT. The purpose of this, of course, is to output text to the printer in an entirely controlled manner. The formatter, although completely integrated in the editor program, is in effect a separate program which operates on the text buffer without in any way altering it to produce a printed document. The formatter allows control codes, which control the way in which text is presented in the document, to be embedded in the text. When the first character of a line is one of five symbols, that is to say, a semi-colon, full stop, greater than, plus or minus, then that symbol is not printed in the document, but the code that follows determines the document's format. It is thought that this method of issuing format commands is pretty well standard. It is certainly the easiest to use. Formatting commands will be on a separate line in the text. An extremely useful feature of AJEDIT is that commands which start with a full stop may be linked together into a multiple statement line by changing to a comma the second and subsequent full stops. Some commands permit or require that a parameter be specified and this will always be a decimal number within the appropriate range. Whenever a parameter is expected, but not specified, it defaults to 0. Again for ease of use and intelligibility, spaces may be added between commands and their parameters. Formatting commands mat also be entered directly from Command mode incidentally. Indeed, we gave an example, .NP and .YP. Let us therefore look at the text formatting commands which start with a full stop.

.PN	Sets the current page number. Don't forget that a number may be added, so .PN 50 will mean that the next page number printed will be numbered 51.
.PLN	Sets the line number on which the page number will be printed.
.PL	Sets the page length.
.FL	Sets the form length.
.HP	Sets the line number on which the heading, if used, will be printed.
.FP	Sets the line number on which the footing, if used, will be printed.
.PARAM	Quite a short manner in which six important parameters may be entered in one command. Indeed, very frequently this is the only formatting command that need be used. It will set the following:- Line number of heading Line number of page number Line number of top of text Line number of bottom of text Line number of footing Line number of end of form (form length) All of this information is entered as decimals, for instance, .PARAM 3,3,6,60,63,66.
.PC	Sets the number of characters to be printed to a line.
.ID	Sets the indentation from the left hand margin — thus .ID 10 sets the left hand margin to column 10. The .ID without a parameter resets the left hand margin to the first column.
.LINE	Enters a series of line feeds.

.LON	This is one of the few commands that will not take a parameter. It instructs the program to issue a line feed character after a carriage return is outputted to the printer. Some printers require this.
.LOFF	The converse of the above.
.NL	Turns off listing to the screen during printing.
.YL	The converse of the above.
.NP	Turns off the output to the printer.
.YP	The converse of the above.

Note that a page number may be added to any of the foregoing four commands so that the screen or print output may be turned on or off at specified pages.

.PAGE	This starts a new page.
.PNOFF .PNON	Turns off or on the automatic page numbering.
.ILN	Initialises the line counter to a specified value.
.HT	Specifies text to be printed at the top of the page.
.FT	Specifies text to be printed at the foot of the page.

Both .HT and .FT may use horizontal formatting commands.

.CC	This is a very important one and sends a control code to the printer. Most modern printers have the facility to specify various print options under software control. This, in fact, allows full advantage to be taken of this facility by specifying the codes to be used. As with all other commands that accept parameters, the parameter is a decimal number. Thus, for instance, if your printer requires a CHR$(20) and a CHR$(21) to perform a particular function, this is outputted by .CC 20,21. So far as is known, any number number of decimals may be entered, although we do not know of any printers that use more than three in a set.
BAR	The Bar command allows control codes to be sited inside a line, whereas the command above requires a separate line.
.JOFF .JON	Switches off and on the automatic justification so that the right hand margin does not have to be justified.
.nn	This enables the printer to move over to a specified column (nn). In other words it is a tab command.
.FOFF .FON	Turns the text formatter off or on. .FOFF will cause the text to be outputted to the printer without justification and without recognition of control codes. Hence, therefore, although the code .FOFF may be embedded in the text and will be recognised, its converse can only be issued at command level since obviously once disabled, the formatter will not recognise the embedded code.
.PPON .PPOFF	Turns on and off automatic paragraph recognition. Sometimes it is desired that paragraphs or larger blocks should not be separated by a page boundary. After .PPON, the formatter will look ahead every time a new paragraph or text block is encountered. If there is sufficient space on the current page to print all the text to the next blank line then the text will be printed on that page. If insufficient space remains, a form feed will be done and the text printed on the next page. This is a powerful pair of commands and perhaps of more use than will appear from our dull description of them.
.BREAK	Forces printing to terminate. Again it may specify a page number.
.PAPER	Causes printing to pause at the end of each page so that single sheets may be inserted.
.LOOP	Restarts printing of the current text.
.EJECT	Used at the end of the text to eject paper to the bottom of the page.
.PRINT	Text following this command is displayed on the video display during the printing of the document.
.PAUSE	A general purpose pause that causes the printing to stop until any key on the keyboard is depressed.
.LINK	This powerful command permits an unlimited number of text files to be printed as one document. Thus it is possible to split larger documents up into a number of smaller, more easily managed, units, particularly useful when a number of people are authorising one document.
MX SERIES 737	Two types of printers have been very widely sold in England. Firstly the Epson MX series and secondly the Centronics 737 which is also available as a Tandy machine. Although the special codes of these machines can be accessed by the .CC command, for ease of use, a number of them have been given separate commands. These enable emphasised print, elongated print, condensed print, elite print and underlining. Some of these, of course, are only available on either one or other of the machines. Again the commands have been made very easy to remember. Emphasised print on the Epson, for instance, is called simply by .BOLD and to turn it off, .NBOLD.

Now we will turn to the line format commands which mostly start with one or more greater than signs.

> TEXT	With this command the text is printed centralised on the line.
> @nn,TEXT	The text is printed indented nn places from the left hand margin.
>> TEXT	The text is printed so that the last character is at the right hand margin. This command should not be confused with right justification. It is applicable when you wish to have a word or two right over on the right hand side of the page.
> > @nn, TEXT	The text is printed so that the last character is at nn places from the left hand margin.
+	Starting a line with a + sign suppresses the following carriage return. Some very interesting formatting can be done with this command in conjunction with the preceding line format commands.
–	Starting a line with a – sign suppresses the preceding carriage return. The same remarks as above apply.
;	Use of the semi-colon at the beginning of a line designates the rest of that line as a comment within the text, that is to say, anything following the ; will not be printed.
<	Starting a line with a allows a temporary override of the current indentation setting. This is particularly useful when, for instance, one has a paragraph indented, but having numbers which extend further to the left. Temporarily overriding the indentation enables the paragraph number to be printed.

One or two concluding notes. If a printer is not connected and output is attempted to it, the machine will hang, but can be rescued by pressing the X key. AJEDIT fully supports lower case text for those who have the TRS-80 Model I lower case modification and, of course, supports it automatically on the Model III. An alpha-lock is provided. On the Model I it is the shift up arrow and on the Model III the normal shift 0. The program is booted in the upper case mode, in other words, capitals, whether the shift key is used or not. Pressing the alpha-lock will toggle to the normal typewriter mode. AJEDIT contains its own driver and will automatically detect on the Model I whether the lower case modification has been incorporated.

As can be seen, this is a comprehensive word processor program, but we hope we have been able to show how the commands have been made very easy to remember and thus the program simple to use. Some of the more sophisticated features of Scripsit, for instance, are not present, but, on the other hand, AJEDIT includes a number of the almost essential functions that Scripsit, for some unknown reason, omitted. Of particular relevance is the ability to get to DOS for directory information and access to control keys on the printer.

Note to the 1983 Catalogue Re-write

AJEDIT has now been up-graded so that it is compatible with the functions of the Keyboard Driver of both LDOS and smal-LDOS. In order to make these functions available to customers without their having to go to the cost of a full LDOS, AJEDIT is now being sold with a complete package of smal-LDOS and the price of the latter has been reduced by some £8 so as to promote the package. The new functions are present in all versions of AJEDIT sold by us after 31st August 1982. Accordingly if you already possess LDOS then you will be able to use these additional features. So as to assist customers who are in this position a normal update is available. In other words if you possess LDOS or smal-LDOS and AJEDIT you can send the latter in for an update and get these additional features. Alternatively if you do not own AJEDIT, but do own one or other of the operating systems, the version that you buy after the date mentioned will support the features. Finally if you do not own LDOS, smal-LDOS or AJEDIT then the purchase of AJEDIT and smal-LDOS as a package gives you some financial gain. There are four obvious advantages to this new version and they all come about by way of the use of the Keyboard Driver in either LDOS or smal-LDOS. With one exception the features are built in to the interpreter of the Model III and hence these improvements are chiefly aimed at Model I owners. The features are as follows:

1. **Key Repeat**
   Keeping a key depressed for longer than half a second or so will cause that key to repeat on the screen. If the key being pessed is a Control key, such as a down arrow, this also will be repeated. We use this example because it is a particularly useful one when scrolling.
2. **Type Ahead**
   This feature maintains a buffer into which key strokes are placed if the machine is busy elsewhere when a key is pressed. This has many obvious advantages, but one particular one with AJEDIT is that in the regular version it is possible to outstrip the program, particularly as it appraoches the end of a line. It is at this time that AJEDIT has to do a lot of house keeping and a reasonably fast typist could outpace the program, resulting in lost letters. With Type Ahead it should not be possible to do this. As far as we know the Type Ahead is active all of the time so it has other advantages apart from keeping pace with the typist. For instance, we frequently use it to type in a command whilst the machine is accessing the disk. The command is then ready on the screen for activation when the machine comes back from its work.
3. **Screen Print**
   This is a self-explanatory feature. When a certain key is pressed the contents of the screen are routed to the line printer. A particular advantage of this feature is the ability to obtain hard copy of text files, in other words files containing the control commands.
4. **General**
   The new version of AJEDIT, unlike its predecessors, supports a number of the features of LDOS and smal-LDOS, in the sense that it will allow such features to be active whilst AJEDIT is being used. The most obvious is Double Density but other commands from these two disk operating systems are also now available to the user. Proper error recovery from, and access to, LDOS is supported with the new version.

AJEDIT, like our other major programs, undergoes a continual updating process. There have been a number of improvements, most of them in the area of compatibility, but one which was requested by a large number of customers, and has now been added, is to double space a page of text.

MINI UTILITIES – THE FIRST OF THE FEW?

The trend now is more and more towards bigger utilities, that is to say, composite programs containing a number of different utility commands. There is, however, still a demand for the more normal utility program which contains say half a dozen commands, and we wonder if there is not a market for yet smaller utilities containing just one feature, carefully chosen so that it will be of use to the most people. Whether there be a market or not, we will attempt such a series and this is the first one. Many times in composing a program one wishes that one could change all of the Print statements into LPRINT or all of the LPRINT into PRINT. That is precisely what this mini utility does. It sits at the top of memory, is very short and can be called at will. It is not necessary to know that you are going to use it beforehand. If you suddenly decide half way through a Basic program that you want to change everything, or when you have finished a program, then just load this mini utility and it will do this job for you.

KNIGHT – A DELUXE TOUR

On page 43 of the catalogue is descibed a Knight's Tour puzzle. We are sure that the author will not mind if we descibe it as a normal or standard version of the puzzle game which, no doubt everybody knows, involves moving a chess knight in such a way that it lands on every square of the board. Knight is a program for fanatics of the knight's tour on the chessboard, as it will carry out the following functions: –

1) Compose knight's tours.
2) Enter a part tour and have the machine find all tours starting that way.
3) Examine, invert, reflect tours once composed or found.
4) Save tours for later examination.

Knight will theoretically find all possible tours on the chessboard. There are so many millions that it would take a very, very long time. Even smaller objectives, for instance to find all tours starting with, say, a particular set of three moves, can take a long time. Tours, when found, may be displayed in numerical or semi-graphical format, printed on the line printer or simply counted. Rather as the Blackjack simulation, described elsewhere in this addition, is a serious study of the game of Blackjack, so this program is a serious study of the Knight's Tour puzzle.

EDIT – A FULL SCREEN BASIC EDITOR

Basic programs can be edited in one of two ways. The interpreter itself contains a full editor, but it is not a screen editor. In other words, it is orientated to commands rather than, for instance, moving a cursor around the screen. Some people prefer this approach, but some people prefer the approach of a screen editor. Probably the fairest thing to say is that a screen editor enables the user to attain far greater program visibility as he is editing. As a result, so it is claimed, far fewer editing errors are made. Instead of editing just one program line, the user can see and modify 15 at a time. Automatic repeating cursor control keys are included, so it is simple to navigate to any character that must be changed. Once there, modifications, deletions or insertions are carried out simply and visibly. The cursor keys also give you controlled automatic scrolling up and down through the program so that the display can be the window on to any block of 15 lines. The principal features are as follows: –

1) Cursor controlled scrolling for maximum program visibility.
2) All keys automatically repeat.
3) Program change by overtyping, deletion or direct insertion.
4) Insert new lines or copy, move, replicate or delete existing lines.
5) Copy, move, replicate or delete blocks of lines.
6) Search programs for strings of characters.
7) Replace some or all occurrences of one string by another with a minimum of keystrokes.

FETCH — A LOADING AID

Both the TRS-80 and the Genie machines are, considering their price and ability, remarkably reliable machines. Mass production, however, being what it is, occasionally faults do occur. In the TRS-80, for instance, the most common problem for Basic users is intermittent failure of the contacts between the cable connecting the keyboard and the expansion interface, usually at the end attached to the keyborad. This can cause some rather surprising results from time to time, and it is mainly towards this difficulty that Fetch is aimed. It is used to fetch programs from the disk when difficulties are likely to be present. Thus FETCH EDTASM will load EDTASM and run it. The extension CMD is supplied by default. When it is not required, that is to say, the user wishes to load a program but not run it, a $ is inserted ahead of the file specification, thus FETCH $EDTASM/CMD. There is no doubt that using FETCH does ease the loading of programs from disk. It not only loads the software, but it also checks memory as it loads and if it finds a bad byte it puts the address on to the screen. It will probably not be a bad RAM chip, but one of the address lines in the interface cable. If Fetch finds an error, then it will try again up to four times before giving up the attempted load.

DEFEND — THE NEW ACTION GAME

From time to time there have been many arcade games published for the TRS-80 and Genie, but the space type action ones that have really been runaway sellers have been Invaders and Asteroids. There have, of course, been many versions of both, but we feel that our English written versions have been the best and we are pleased to continue this tradition by now publishing the newest of this type of software — Defend! Invaders is a great deal of fun, but is really played in one plane, vertical. Asteroids is more "three-dimensional", but is concerned with inanimate objects, namely lumps of rock. In Defend you feel that you are actually in there fighting and caught up with the excitement of the game. Essentially it is not too much different from most other arcade games. The object of the exercise is to shoot down enemy ships which are coming at you, firing at the same time. If you are skilful or lucky enough to obliterate them all, you have to navigate through a heavy shower of meteorites. If you get through that then you must navigate a tunnel before you are in the clear. The game is played in the horizontal plane, that is to say, the enemy is coming at you latitudinally, but one of the great features of it is that you are able to control your ship in all directions in the single plane. In other words, you can not only go up and down and both directions of sideways, you can also go diagonally. In the highest of the three levels of play the control of the ship is particularly crisp and fast, nontheless you will need skill not only to avoid the shots of the enemy, but also to avoid collisions with them. Dodging around in the shower of meteorites is not very much fun either. The sound effects are good and there are three levels of play. Five highest scores are maintained and a chart of them is displayed every time a game is displayed. In addition to your main armament of laser cannon you have a most important further armament, namely a limited number of Smart Bombs. These will cause all ships on the screen to become impotent. They will still exist but they will not be able to fire at you. As they are still in existence, however, a collision with them can lose you a ship. The big advantage of these bombs is that you are given a score for the number of enemies that the bombs annihilate, thus it is far better to use a smart bomb if you have a screenful of enemies than if you have only got one on the screen. Another important feature of the game is relevant here. Up in the right hand corner of the screen is shown a rectangle which has a divider about two thirds of the way along from the right which, of course, divides the rectangle into two areas. The area on the left represents the screen. The view on the right represents the area imagined to be immediately to the right of the screen. It will be recalled that the play is horizontal, hence the larger area to the right in the rectangle represents the space which is just being approached. The effect, therefore, is that one has a preview of the number of ships coming up on you. If a smart bomb is used with one eye on the enemy ahead, it can be quite devastating. A hyperspace control is also included. This is similar to the one in Asteroids and when activated merely moves your ship to another part of the screen. You start play with five ships, but a score of 10,000 will give you an extra ship and an extra smart bomb. You have three of the latter to begin with. Different types of enemy ships, of course, give you different point scores and they vary from 200 to 100. Incidentally, just as you can manoeuvre your ship diagonally, so can the enemy shoot and move diagonally. These sort of games are very much a matter of taste, but Defend has been test played by a number of people, all of whom have played other arcade type microcomputer games, and for once they have been unanimous in thinking that this is the most enjoyable. As mentioned above, there are three levels of play. These affect a large number of the game parameters, for instance, a different number of aliens will appear with each level, the lowest has 30 and the highest 40 to start with. The number of missiles that can be on the screen at any one time is also affected, a maximum of 6 on the highest level of skill. Every time the whole course is completed, five aliens are added, up to a maximum of 60. The disk and cassette versions are essentially the same, although the former does save high scores to disk. It is, of course, compatible with all current Genies, but will not be compatible with the earliest Video Genie unless it has had arrow keys and a clear key added.

NEW SOFTWARE FOR THE TANDY COLOUR COMPUTER

RACING DRIVER — IN FULL COLOUR YET!

There have been a number of programs written which simulate the driving of a racing car along a speed track. Some do it on a plan basis, viewed as from a helicopter looking down at the track, and some from the driver's position. This program is very similar to the one described on page 4 of the catalogue in that, whilst driving, you are able to see the road ahead of you, not a plan of the whole course, and therefore you have to be pretty fast to avoid crashes. Obstacles are placed in your way and sheets of ice form on the track from time to time, sometimes sending you off in a random spin. The program takes full advantage of the facilities of the TRS-80 colour computer, for instance, in driving the car you can either use the Tandy joystick or two keys, sound is included throughout the game and the display is as colourful as one is likely to see. A running best score is kept and there are three levels of skill. These do not affect the speed of the vehicle, but they have a more pronounced effect on the number of obstacles and ice patches supplied.

SPACE FIGHTER [COLOUR] — AN OLD FRIEND

Before we forget to mention it, there are now two colour versions of Space Fighter, the first was introduced a little time ago for the modified Video Genie colour computer. This program is for the TRS-80 Tandy colour computer. These two machines are not compatible, so customers must state for which machine they are buying the program. Space Fighter is a well known program which we have marketed for a number of years. The idea is that you are out in space, under the stars, with five enemy fighters to shoot down. You are, of course, provided with sights and laser beams and if you get everything just right your enemy is destroyed. This program has been chosen to convert to colour because it seems to lend a certain amount of realism to the program and now that the Tandy colour machine has provision for joysticks and sound, Spacefighter has been born again!

New Versions

Customers should be aware that as policy, Molimerx always supply the latest version of any particular program. Hence, there are occasions when the actual program delivered will be different to the description in the catalogue. This is inevitable.

EPSON PATCH – A SCRIPSIT PATCH FOR THE EPSON MX-80 PRINTER

To say the least, the MX-80 series of printers constitute an extremely versatile range, in fact some of the things it can do are little short of miraculous. The problem is that Scripsit can access virtually none of these advanced features and it is the purpose of this patch to make these functions available to the user. Versions are available for either the cassette or disk versions of the Model I Scripsit. There are several versions of the MX-80 around, so perhaps one should not be too definitive about it, but so far as we know, this driver will support all of the print types of the MX-80, in particular as follows: –

Condensed
Normal
Enlarged
Emphasised
Double
Condensed/Enlarged
Emphasised/Enlarged
Emphasised/Double
Emphasised/Double/Enlarged
Condensed/Double
Condensed/Double/Enlarged

Printer formats may be mixed freely with standard formats. A pseudo, but effective, underlining is supported, as also is sub and super scripting. Individual characters or words in a line may be underlined, but this will be at the expense of right hand justification. There are a number of other little gems included in this driver.

FED – THE LDOS FILE EDITOR

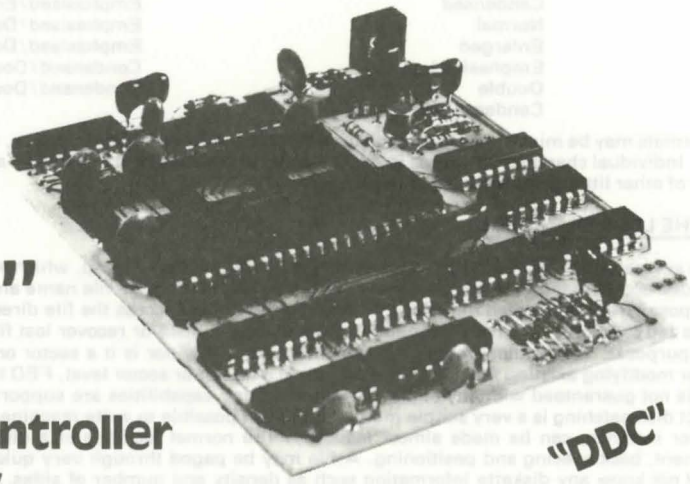
There are several zap programs on the market, naturally we feel that Prozap, which we publish, from Nigel Dibben is the best. Most of them include access to the relevant tracks and sectors by stipulating the file name and this is, of course, very useful. FED, however, is an all purpose screen orientated file editor. In other words, it will access the file directly on the disk and modify or build it as required. Unlike the zap programs, it is not designed to repair damaged disks or recover lost files, although an experienced operator could use it for these purposes. You cannot create or extend files with FED, nor is it a sector or file copier. It is entirely dedicated to displaying, printing or modifying existing files at a file level, not at a tractor or sector level. FED is intended to run with the LDOS operating system only and is not guaranteed with any other. Complete editing capabilities are supported, including hexadecimal and ASCII modifying, thus direct disk patching is a very simple matter. It is even possible to write machine language code directly to the disk. Small changes in files, for instance, can be made almost instantly. The normal facilities of a disk access program are provided, including record advancement, back spacing and positioning. A file may be paged through very quickly in either direction. Most important of all, the user need not know any diskette information such as density and number of sides, number of sectors per granule etc. The beauty of FED is that it is only necessary to know the proper filespec in order to gain access to that file. Searching in both ASCII and hexadecimal are, of course, supported this includes onward search. One feature that we find extremely useful we would like to describe a little more fully. As a software house we are, of course, continually concerned with patching programs and we believe that the end user is also concerned with this function, although perhaps not as frequently. A common problem that we run up against is that an author will supply a patch referenced to the load address of the program. In other words, he will frequently tell us to patch a certain address in memory and leaves it to us to reload that patched program back on to the disk. This is both time consuming and extremely prone to error. The function in FED of which we speak will allow a user to enter into the program a memory address. The program will then automatically calculate where that address lays on the disk file. In other words, given the memory address of a patch, one can automatically find out where it is positioned on the disk. Not only does the program tell you where it is, it shows you. It calls up the relevant sector and positions the cursor over the relevant byte. Almost as useful is the reverse of this function. A command will instruct the program to display the ultimate memory address of the byte laying under the current position of the cursor. A printer is, of course, fully supported. Finally, FED supports two methods of screen display, one is a 256 byte screen which most zap programs employ, but the other is a 128 character display mode. This gives a lot more room on the screen and makes the display more legible. The program supports over 20 commands plus the usual cursor movements.

LOST COLONY – MANAGE A NEWLY COLONISED PLANET IN DEEP SPACE

Lost Colony is a resource management simulation. The player tries to run a hypothetical economy on ''Warrens World'' with limited powers. It is a democratic simulation in that the player will be turned out of office if the workers under his control become dissatisfied with his administration. In the game, worker satisfaction is a function of their standard of living. In order to bring the game within some reasonable limits, all economic activity is condensed into five broad industries: farm, minerals, energy, manufacturing and transportation. The farming industry, as might be expected, produces food for the colony. Minerals and energy industries yield all of the raw materials used on Warrens World. These include – in addition to things like steel and hydro-carbon based fossil fuels – plastics, electricity, glass and a wood substitute. These products are then consumed by the manufacturers, who are under the direct control of the colony's leader. From the manufacturers come consumer goods, robots and heavy machinery. The transportation industry, in turn, makes use of some types of heavy machinery both to supply the needs of the other industries within the colony, and to explore and settle new areas of the single continent on Warrens World. Exploration and settling of new territory are necessary to bring new sources of raw materials into production. In order to achieve production in any industry there must be people working in it. Beyond that, there are several factors which, collectively, determine the productivity of workers in the industry. These include the number of production sites, the living standard (or rate of pay) for the industry and the amount of capital equipment assigned to support the labourers. It follows, then, that to correct a shortfall in any industry the player need only allocate robots from the current year's production. He can raise the living standard, or induce more people to go to work in the blighted sector of the economy by doing the same. There are limits on the player's freedom to do these things, however. First, only so many robots will be effective in raising productivity. The rules to determine this limit are complicated and vary from industry to industry. In practice, they are high enough to be ignored most of the time. It is the workers of whom one must be careful. While raising the pay scale selectively to balance shortfalls in production is effective, it has the ugly side effect of making those workers who did not receive a raise less happy. If the disparity in wages is large enough, they will threaten to walk off their jobs unless you meet a frequently outrageous demand for consumer goods. Note that all wages are paid in consumer goods and that the living standard for any industry is proportional to the wage rate. If too great a differential exists between the living standards of separate industries, you will be turned out of office to work in the fields. There is a second way to alienate the masses in this game and that is simply not to pay well enough. This is the most common cause of changes in government. Your people have an expectation that their lot in life will improve. In the early days of an administration they, realistically, do not expect to live like kings and queens. However, the minimum living standard below which unrest is generated rises steadily with time. A table of this minimum is included in this documentation. The problem to be solved is the difficulty of fabricating enough industrial machinery to expend the economy faster than the rate of population growth, while simultaneously producing enough consumer goods to keep the workers pacified now. Overbalancing in either direction – too many consumer goods, or too few – will result in the termination of your term in office. To continue in power until a ship arrives from Earth is the goal. This will usually happen in year fourteen or fifteen. By then a successful colony will have approximately doubled in size and explored most of the world for valuable deposits of raw materials. Resource management games such as this one have, of course, been known for a long time. They probably all stem from David Ahl's Hamurabi. These newer ones, and this is a very new one, however, are considerably more sophisticated and, at least to our taste, give far more enjoyment.

Aerocomp's Proven Best-By Test! The "DDC"

Double Density Controller



★ Technical Superiority

At last! A double density controller for Model I with HIGHER PROBABILITY OF DATA RECOVERY THAN WITH ANY OTHER DOUBLE DENSITY CONTROLLER ON THE MARKET TODAY! The "DDC" from Aerocomp. No need to worry about the problems that keep cropping up on existing products. AEROCOMP'S new analog design phase lock loop data separator has a wider capture window than the digital types currently on the market. This allows high resolution data centering. The finest resolution available with digital circuitry is 125 ns (nano seconds). The "DDC" analog circuit allows infinately variable tuning. Attack and settling times are optimum for 5-1/4 inch diskettes.
The units presently on the market use a write precompensation circuit that is very "sloppy". Board to board tolerance is extremely wide - in the order of ± 100 ns. The "DDC" is accurate to within ± 20 ns.
The botton line is state of the art reliability!

★ Test Proven

Tests were conducted on AEROCOMP'S "DDC", Percom's "Doubler A"* and "Doubler II"* and LNW's "LNDoubler"** using a Radio Shack TRS80*** Model I, Level 2, 48 K with TRS80 Expansion Interface and a Percom TFD100* disk drive (Siemens Model 82). Diskette was Memorex 3401. The test diskette chosen was a well used piece of media to determine performance under adverse conditions. The various double density adapters were installed sequentially in the expansion interface.
The test consisted of formatting 40 tracks on the diskette and writing a 6DB6 data pattern on all tracks. The 6DB6 pattern was chosen because it is recommended as a "worst case" test by manufacturers of drives and diskettes. An attempt was then made to read each sector on the disk once - no retrys. Operating system was Newdos/80, Version 1.0, with Double Zap, Version 2.0. Unreadable sectors were totalled and recorded. The test was run ten times with each double density controller and the data averaged. Test results are shown in the table.

★ Features

TRS80 Model I owners who are ready for reliable double density operation will get (1) 80% more storage per diskette, (2) single and double density data separation with far fewer disk I/O errors, (3) single density compatibility and (4) simple plug-in installation. Compatible with all existing double density software.

★ TEST RESULTS ★

MFR & PRODUCT	SECTORS LOCKED OUT (AVG)
AEROCOMP "DDC"	0
PERCOM "DOUBLER II"	18
PERCOM "DOUBLER A"	250
LNW "LNDOUBLER"	202

Note: test results available upon written request. All tests conducted prior to 8-25-81

The above, of course, is an extract from the advertisement run by Aerocomp of the United States in a number of U.S. magazines. Some time ago we started to receive requests from customers for a Doubler board, so we consulted with Logical Systems Inc. in the States, who, of course, wrote LDOS. They recommended to us the board made by Aerocomp and it certainly seems to be an extremely good product. We are therefore stocking this product. It is compatible with LDOS, NEWDOS 80 and, so far as we know, all other double density DOS's. It is not, of course, compatible with the Video Genie which has its own double density board.

COMPUTER POOLS – INCLUDING FORM PREDICTION

We already publish a pools forecasting program described on page 36 of the catalogue. This program is similar in many respects, but does have some added features which made it worthwhile publishing. Present owners of Pools should be aware that the current program is not written by the same author and hence updates cannot be carried out. Computer Pools is a program written to help you predict the results of football matches for the football pools. We must make the usual disclaimer that it will probably not make your fortune and certainly no guarantee is made in this respect! It will, however, we believe, increase your chances, and certainly make the mundane task of filling in the coupon more enjoyable. The important feature of Computer Pools over the previous Pools is that it stores the performance of a team in its three previous home games and three away games and uses this to help predict the result in the next match. Various weightings are incorporated, although they can be overridden by the user if he so wishes. This enables the football enthusiast, i.e. the punter who knows what he is talking about, to use his experience and hopefully improve the computer's predictions. Basically the program allows you to keep track of the performance of the 130 teams in the four English divisions and the three Scottish divisions. As mentioned, it keeps track of each team's performance in its previous three home games and its previous three away games and combines these to predict a performance potential. It then compares the performance potential of teams in forthcoming fixtures and lists the matches, indicating those with the greatest likelihood of away wins, draws and home wins. Because the form is based upon the results of the three previous home games and three previous away games it takes approximately 6-9 weeks before the full form file is created and therefore that the full predictions can be made. The program is cassette based at the present time and a quantity of data has to be maintained. The user should be aware, therefore, that he will require at least two or three blank C90 cassettes.

BASIC INSERT – SOPHISTICATED STRING MANIPULATION

A basic definition of the use of this program is easy to give. It will take the contents of a string variable and insert it into a stipulated line of a Basic program. Its uses, however, are many and varied. This magic, incidentally, is carried out by a machine language program which is accessed by a subroutine with the USR statement whenever needed. Let's look at some of the applications. Assuming that you have a string variable equal to "X = 10:Y = 20" the program will, on command, tokenise the string and insert it into a dummy line in your existing Basic program. The newly inserted line can then be branched to and the contents of that line (as it is now tokenised) will be treated by the interpreter as if it were part of the original program. This is a powerful tool. Consider, for instance, a series of calculations stored on disk or tape in ASCII format. They may be read into your own Basic program and then inserted into the actual program and executed. It cannot be emphasised too strongly that although the program could be used for string packing for graphics or machine language manipulation, it is not a string packing routine as such, for the string is actually tokenised and inserted into a dummy line, whereafter it forms an integral part of the program. The string variable can contain any statement that can be tokenised by the interpreter, not just calculation type statements. To recapitulate, therefore, the three principal applications for this routine are:-

1) To store machine language code in a line of your program, thus alleviating the necessity of carrying out a System load of a separate machine language tape.
2) To store graphic code in a string to give fast graphic output to the screen.
3) By far the most useful, the ability to take, for instance, calculations from storage and automatically place them into dummy lines in an existing program.

The first two applications, of course, are generally well known and come under the generic title of "string packing". The use of this technique has been explained in the Hints and Tips column of the catalogue from time to time. This program needs a little bit of thinking about. It is one of these pieces of software which sounds rather unglamorous on the surface, but in fact can be extremely useful.

MATHS SPEED CONTEST – EDUCATIONAL AND FUN

This program is a clever attempt to make basic mathematics a little more palatable than it normally is. Essentially what the program does is to give you up to 20 questions at a set speed. It then times the length of time it takes you to answer and keeps a running note of the fastest score. It is, therefore, essentially both a game and an education. The questions are purely mathematical and two levels are provided. On the first, that is to say, the easy level, the questions are simple questions of the 6 x 12 variety. On the second level one is given the choice of questions on either addition, subtraction, multiplication, division or a mixture of them all. These questions are obviously somewhat harder, although all of the questions generated by the program are capable of being worked out mentally. In other words, paper and pencil is considered to be cheating! This program will support sound.

MILES PER GALLON – SAVE SOME MONEY ON YOUR CAR

There have been a number of programs on the market which have purported to assist the car owner in getting the best mileage and performance out of his vehicle. The ones that we have seen have not been particularly good, and in the main were really file handling exercises which simply kept a record on the computer rather than on paper of the miles per gallon and other performance factors. In the July 1981 issue of Byte magazine there appeared a very involved and technical article which explained the Kalman approach to a certain statistical problem. Although that problem had nothing to do with the subject under discussion, the techniques evolved by Mr. Kalman became known as the Kalman Optimal Recursive techniques, or simply Kalman filtering. The author of the article, Jerry Lobdill of Austin, Texas, took Kalman's technique and addressed it to the problem of petrol consumption of a car. It is this article that Chris Wilkinson has used as his basic research. Changes in the mileage which a car will travel to a gallon of petrol are very important indicators as to the state of the health of the vehicle. In many respects it is similar to the pulse of the human body in that it is the one parameter which gives an indication of how well the car is performing. Apart from this diagnostic use, the economic factor rears its ugly head as petrol has now gone beyond the realms of being expensive and has entered the stage of being exorbitant, hence any small fraction of a gallon that can be saved is welcome to most of us. The program, when supplied with details of fill ups, calculates the miles per gallon and compares this with the expected value. It is this expected value which has previously been calculated by the program using the Kalman filtering technique. The comparison of actual and expected values allows both sudden changes and longer term changes in petrol consumption to be detected. A sudden change might be indicative, for instance, of a failed spark plug, a longer term change could be due to the gradual wear of points and plugs. As we all know, it is imperative that a car owner should change his oil from time to time and it is not really disputed that the more systematic and regular these changes are, the better it is for the condition of the vehicle. Accordingly this program will remind you of when it is time to change oil and, additionally, prompt you to other events as previously chosen by you. When you run the program, the first thing that must be done is to set up a file containing the vital statistics of your vehicle. You will be asked for a number of different inputs and it may be of use if we go over these briefly here for they will indicate some of the features of the program.

1) Initial mileage reading

   The speedometer reading at the time that the program is first run should be entered.

2) Expected Miles per Gallon

   This should be an educated guess. Alternatively, a manual record of one or two fill-ups can be made, but it does not matter if the figure entered is a little inaccurate, it would simply generate a spurious warning message for the first run or two.

3) Number of Events to be Flagged

   The decision must be made here as to how many events such as oil change, point adjustment, brake adjustment and services of which you wish to be notified. If you do not wish to use this section of the program then no events need be entered, but if you do enter some, the number must be less than 10.

4) Defaults

For each of the further parameters a default has been supplied by the program. You can either elect to accept those defaults or to enter your own figures.

5) Variance of Miles Per Gallon

The default is .02. This is the factor which governs how much notice is taken of each new miles per gallon value in calculating the expected value. This is an important entry and will require some thought. If you allow the variance to be high, then you will not get the warnings you need, on the other hand, if you set it too tightly you will get a lot of spurious warnings. You must also consider whether you normally do a lot of motorway driving or a lot of town driving as obviously this will affect the consumption.

6) Variance of Measurement

The default is 0.4. This factor takes account of inaccuracies in the measurements of the total amount of petrol and the mileages.

7) Threshold for Short Term Alarm

The default is 1.26. If the calculated miles per gallon is greater than plus or minus the short term alarm threshold away from the the expected miles per gallon, a short term alarm message will be displayed.

8) Threshold for Long Term Alarm

The default is 2.53. The long term alarm is calculated by summing the differences at each fill-up between the calculated and expected miles per gallon. If this sum is greater than the threshold, the long term alarm message is displayed.

The above completes the parameter initialisation. It should be mentioned that they can be changed at any time. In order for this program to help you, there are one or two things that the user must do to help himself. Most important, of course, is that the figures entered into the computer must be reasonably accurate. Certain in-built variances are allowed for as explained above, but gross errors in input will cause gross errors in output. Although not literally essential, it is certainly very strongly advised that when you start to use this system, future fill-ups should be to the top of the tank. It is possible to alternate between half filling and filling your tank, but if you want to make full use of the facilities of the program you should be prepared to get into the habit of filling your tank to the top on each occasion. This obviously does not mean that you use more petrol, nor expend a greater outlay in cash at any time, for you can fill it up as often as you wish, you do not have to wait for the tank to be empty before you fill it. It is probably true that the more frequently you buy petrol and therefore run the program, the better, as to some extent the program increases in accuracy and efficiency as it goes along. Needless to say, fleet owners or other owners of more than a single vehicle can use the program, and fleet owners particularly may well benefit substantially. The program is available on cassette or disk. Customers must state which as they are different versions.

TRIUMPH OF ROME – A ROMAN WAR GAME

War games are getting more and more popular for microcomputers. The Triumph of Rome is another one from perhaps the originator of this new type of software, Dr. R. Bodley-Scott. It is set at the beginning of the 2nd century B.C. and the game depicts the war between Antiochus III of the Seleucid Kingdom and the advancing legions of Rome fresh from their recent victory over Carthage. The Seleucid Kingdom was a Greek empire stretching from north east Greece to the western borders of India. The prize over which the two warring nations were fighting was the domination of Greece and the Greek cities of the western coast of Asia Minor. Invited into Greece by the Aetolians and Thebans, Antiochus sailed across the Aegean Sea with an army and set about conquering northern Greece. In retaliation, the Romans sent a larger army from Italy, which succeeded in driving Antiochus back to Asia. After several naval actions in the Aegean, the Roman fleet was finally victorious, and their army crossed the Hellespont into Asia unopposed. They then joined up with their ally, King Eumenes of Pergamum, and defeated Antiochus at Magnesia. In the peace treaty which followed, Antiochus was forced to surrender his western territories to Rome's allies. In the basic format, the game is similar to Hannibal (see page 42 of the catalogue), but certain key improvements to the program logic have made the simulation of ancient warfare both more realistic and more decisive. A typical game will take about 3 hours to play and a facility for taping a partially completed game is included. Three maps are provided depicting Greece and the areas of Asia Minor on the Aegean Sea. The forces at the disposal of each player include infantry, cavalry, elephants, siege artillery, warships and transport ships. Taxes are raised, troops paid and new troops recruited. The program covers naval engagements, land battles and sieges and, of course, takes full account of the different capabilities of the various troop types in differing circumstances.

CITY ENCOUNTERS – GOES WITH RANDOM DUNGEON GENERATOR

City Encounters is a companion program to Random Dungeon Generator described on page 80 of the catalogue. It is a game aid for umpires controlling "paper and dice" fantasy games. When used in conjunction with the sets of rules suppiled with these games, City Encounters forms a complete system for creating city adventures. Many thousands of permutations ensure a wide variety of encounters and adventures in the city for both inexperienced and experienced players and player characters. Typical city adventures for lower level characters might include tavern brawls, burglaries, assassinations, rescues, attacks by rivals or thieves, brushes with the militia, forays into the surrounding countryside, and, using Random Dungeon Generator, raids on rich tombs, temples etc. The campaign can grow as the players' characters climb up the ladder of thier chosen professions, so that eventually they can become involved in matters of high state policy or even aspire to the throne. The only limit to the expansion of the game is the umpire's and the players' imaginations. City Encounters is a completely menu driven program. Firstly, it can create new player characters, giving scores for strength, intelligence, wisdom, charisma, comeliness, dexterity, constitution and psychic faculty. It details the character's family background and social level. It describes his age, height, build, complexion, hair colour and voice pitch. It lists his starting funds, with which he must make his way in the world. (If the son of a beggar, he must start without such luxuries as money!) Secondly, the program will give a description of the street in which the players currently find themselves. This can either be used randomly as the players wander around an unfamiliar city, or it can be used to help build up a permanent gazetteer of their home city. Subsequent "dungeon" and "wilderness" adventures can use this home city as a base. When they have acquired enough money, the players can buy their own house or business, and work their way up the social scale to achieve fame and power. Thirdly, the program will give details of encounters in the streets by day, in the streets by night, in taverns, and in areas where those offering or seeking employment gather. The program details the type of encounter (e.g. attack, insults, questions, propositions, pocket picking etc.) and the reasons for the encounter (e.g. attack because of mistaken identity or racial hatred, or to capture the players as slaves or for sacrifice, propositions of buying and selling, or employment in a large variety of tasks or services.) The list of possible reasons is far too long to include here. The types of characters encountered include nobles, high officials, priests, sorcerers, fighters, merchants, thieves, courtesans, elves, dwarves, guildsmen of each of the various guilds, ordinary townsfolk and visiting country folk of every walk of life, militia, soldiers, sailors, thugs and beggars. The list is almost endless. Where relevant, the program gives their experience level and social level, any jewellery or magical items that they may be carrying, arms and armour, full lists of spells, and a breakdown of any followers or retainers. In a tavern, the program gives details of all the occupants. An offer of a drink to a likely individual may be the start of a whole new adventure. Should the players successfully burgle a house or other wealthy habitation, the program will give a breakdown of any treasure that may be found. At night, foul creatures walk the darker streets and unwary players may be unfortunate enough to meet ghouls, zombies, giant rats, gargoyles, vampires and others. Like Random Dungeon Generator, City Encounters has been designed so that it can easily be customised to fit the exact details of the particular set of rules used. Instructions for modifying the programs are given in the documentation and there is no difficulty in replacing the spells, monsters, treasures, gods etc. listing in the program by others which may suit the user's campaign better. Note that this program is not a complete game in itself and must be used in conjunction with a set of fantasy rules.

AMATEUR LOG – A UTILITY FOR THE HAM

This program is strictly for the radio amateur and will have no application to anyone else. It is designed to store and re-access all on air activity of a radio amateur and provides real time QS0 logging, history file access, file update and create, repeater timer, QRA locator

and full QSY facilities. In use, the time and date are entered into the program first of all, the form in GMT. The program then formats the screen with the work area and waits for a menu prompt as displayed on the split screen. In operation the QS0 to be worked is first signed on to the system. The program will then check that the computer has been given a frequency that is being used for that QS0. If required, it will request a frequency in Mghz. The disk file is then opened to check through for any file with the same call sign. Only one file is created for each call sign on any given disk. If any previous QS0 has been worked with that station, the computer will advise that a file exists and will display the first name of the operator and/or the last date worked. If the QS0 being worked is not found on the disk, a file is immediately opened. Any file may be updated as required and 250 files may be created on a formatted disk. A disk with a minimum operating system on it can contain about 235 records. A repeater timer is available which, upon request, starts counting and displaying seconds from the internal clock. The seconds are displayed at the top right hand corner and will prompt the operator after 10 minutes, if not reset, or after 15 minutes to remind of call sign regulations requiring a call sign to be broadcast. This is particularly useful when transmitting RTTY. A QRA locator facility is provided which, upon entering the QRA locator, will display the grid reference. As will be known, TRSDOS updates it dates at midnight whereas NEWDOS+ does not. It is, therefore, advisable to use program with TRSDOS unless the feature mentioned is not important to the user.

DUEL IN THE DARK – IN A DUNGEON

This is a new type of game that combines the atmosphere of an Adventure with the interest of strategy and deduction. It is essentially what it says, a duel between two people in a darkened dungeon. When two human players take part then they are armed with a dagger and a knife. When a single player plays the computer then the latter takes on the form of a big, brown, fearsome bear. The dungeon can be visualised as a rectangle of squares. Players can move from one square to an adjacent one in turn. The dungeon is divided in to two rooms by a north/south partition wall with a door in it. The dungeon has two windows, but it is dark outside. The players cannot, therefore, see each other or the various items scattered around the room, but they can see the outlines of the windows. At the beginning of the game the shape of the dungeon, the position of the dividing walls, the position of the door and windows are decided at random, as also are the positions of the players, the various clue items in the dungeons and the directions in which the players are facing. There are three levels of play which determine the overall size of the dungeon. Level 1 gives about 13 playing squares, whilst Level 3 gives about 30. The player has three matters which should be uppermost in his mind. First of all, he has got to find out as much as possible about the dungeon, the location of the windows, the doors and the objects. Secondly, he must locate and kill the opponent. Thirdly, and probably most importantly, he must avoid being killed himself. Information about the room is gained in a number of ways. Appropriate messages indicate if, for instance, a player hits a wall. Another message would indicate when a player is passing through the door. A player who is in line with the window and is facing it is told that the window is visible. There are various other messages displayed from time to time. Apart from the permanent physical features of the dungeon, messages are given when the player encounters some objects such as a man trap. Stepping on the man trap means a delay of five turns. A really testing game can be enjoyed when the players agree that there should be no aids of any kind. Attacks by one player upon another take three forms, throwing the knife, stabbing with the dagger and grabbing the opponent. A good fun game and, with the bear supposedly loose in Hackney, certainly of interest at this particular time.

MAILIT – FOR SMALL BUSINESSES, CLUBS AND PERSONAL MAILING

This is a general purpose program which essentially services a mailing list comprised of up to 200 names and addresses on a single disk drive. It is somewhat more than a mailing list program as it provides the following features.

1) Customer file creation and amendment.
2) Letter creation and amendment for mail/merge facilities.
3) Customer file sort.
4) Reports
   - customer list with missing numbers
   - customer list in alphabetic sequence
   - labels standard and non standard
   - selection on all reports using a reference field
   - Invoice printing on A4 stationery

Each entry on the mailing file can contain the following information: name, three address lines, postcode, telephone number, a reference letter address form, and, finally, miscellaneous information. Complete access to the files is given, they may be created, extended, entries may be inserted, amended or deleted. Files for 200 customers may be contained on a stripped down system disk. Only one disk drive, incidentally, is required. Instructions are included as to changing the program so as to increase the maximum number of customers allowed per disk. Each customer file contains a name (25 characters), address line 1 (30 characters), address line 2 (25 characters), address line 3 (20 characters), postcode (8 characters), telephone number (30 characters), reference/invoice number (6 characters). 41 bytes are also used for general information, part of it housekeeping, but also 19 bytes for a letter address form and 20 bytes for miscellaneous. The letter address form is only used for letter printing and is the form by which you wish to address that customer, hence "Mr. Harding" inserted in the address form will result in letters addressed to "Dear Mr. Harding". The 20 byte miscellaneous area is never printed, it does, however, appear on the screen and can be used for any internal purposes.
Mailit, therefore, is a general purpose customer service program which enables a record to be kept of each customer's details; enables standard letters to be mail/merged; invoices to be printed and generally carries out the other chores associated with a customer list. It is, as previously mentioned, particularly recommended for small businesses and has the particular advantage of enabling a number of functions which hitherto could be carried out by a number of programs to be amalgamated into one compact customer service program.

CONSTELLATION – TURN YOUR COMPUTER INTO A TELESCOPE

This unique program turns your computer screen into a telescope so that you may view the sky from any point on earth for any time and date in the 20th century. In other words, if you want to know what part of the sky looks like from, say, Calcutta on 12th January 1982, this program will show you. Details of over 40 constellations are contained in the program, together, of course, with the major planets of the solar system, that is to say, Mercury, Venus, Mars, Jupiter, Saturn and, of course, our sun. The only data that the user has to know is the latitude and longitude of the observer's position together with the date and time. The "telescoping" can be both moved and adjusted for magnification as there are four cursor movements for movement in East/West, up/down directions, together with two commands to zoom in and zoom out. Other ancillary commands include a re-centering display, setting a new cursor position and displaying the stars by constellation or magnitude. Although we have no knowledge of the subject covered by this program, it seems to perform its functions very well and will, no doubt, provide a useful tool to the amateur astronomer and other people interested in the subject.

DARTS – AN ENJOYABLE SIMULATION

One supposes that there are some games which are impossible to simulate on a computer. Some, such as board games, are very easy. One which comes between these two extremes is the game of Darts. First of all, on a Model I Tandy or Genie it is virtually impossible to draw a meaningful circle, hence it is impossible to draw a darts board. Mr. Elverstone, the author of this program, has got over this problem very nicely by displaying only part of the board at a time. Funnily enough, this does not really detract from the play of the game as one might think it would, for if you visualise youself playing darts you are normally aiming at one particular number and if you have even reasonable skill the chances are that you will hit that number or those adjacent to it. The author has been extremely clever in

incorporating into the game a certain amount of user skill in the actual throwing of the dart. We will not go into details in this sales description of the techniques used, but it seems to us that the game which results gets about as close to playing a game of darts on a computer as it is possible to get.

CHEMICAL FORMULAE – AND HOW TO WRITE THEM

This program is a straightforward educational one to enable you, your children or your pupils to construct and write chemical formulae. It makes use of graphics to construct letters (both upper and lower case) which are displayed on the screen together with the charges of the ions. Ions may be added or subtracted until the total charges have been balanced. The computer will then display the correct formulae for the chosen compound using brackets and descending numbers as required. Assuming the use of a 26" television screen, the ions and formulae are readable across a normal sized classroom. The program, which has been written by Mr. T. Randall, an experienced chemistry teacher (and, incidentally, the author of Elemental Maze), may be used either by teachers as a demonstration, or by individual pupils to help with particualr problems (for instance, when and where to use brackets) and finally by pupils at home for revision and practice. A useful educational program which performs a useful function.

BOOKS

For some time we have had to fight a rearguard action in attempting to keep our policy of just selling software. From time to time we have been pressured into stocking small items of hardware, particularly the doubler and data separator boards and also occasionally we have been asked by customers to stock more books. Our policy on this subject up until now has been only to stock those books that have a particular practical utilitarian application to the functions of either the TRS-80 or the Genie. Although we intend to continue this, we have been asked to stock a few more books about the TRS-80 because apparently they are not all that easy to obtain from booksellers. Accordingly the following titles have been added to our range. We would like to point out that the prices of all books are listed in the index under the title "Books"; they are not referenced under their individual titles.

LEVEL II BASIC

This is a well known book which is on sale in Tandy shops. It starts by guiding you around the hardware. We do not feel that there is an awful lot more in these dozen or so pages than is contained in the TRS-80 manual. However, the second chapter entitled "Getting Started" starts by saying "now the fun really begins ..." and the next 330 odd pages take the reader through Level II Basic on a step by step basis, rather reminiscent of the Model I Level I manual by David Lien. The text is quite entertaining from time to time and it does contain a self-teaching aspect in that questions are asked almost continuously throughout the book. Probably a fair description of it is that as a self-teaching guide it does take you one step further than the Model I Level II manual and, relevant to that, has two applications. One, if you find the Level II manual difficult to understand, or you do not think it goes far enough, then this book is probably your next step.

MORE TRS-80 BASIC

This book is by the same author as the one above and is essentially a continuation. It is also a self-teaching guide with plenty of questions to prompt you. Of particular interest are two chapters on cassette files and a further two chapters on disk operation and disk files. Graphics and animation are also highlighted. For those readers who are not too well up on memory allocation and usage the second chapter is entitled "A Guided Tour of Memory" and is exactly that. During the tour it explains the PEEK and POKE statements and should contain a little of interest for almost everybody.

MY MICRO SPEAKS BASEX

This book is an in depth examination of Basex which is a versatlie new language for 8080 and Z80 type micropcomputers. It is said to combine the best features of Basic and executable machine language code. The major advantage of Basex is speed. Programs can run up to 10 times faster than similar programs written in Basic. Furthermore, in that Basex programs are more efficient than Basic, they should use less space in memory than would a similar program in Basic. Basex does not seem to be terribly hard to learn, it is essentially a combination of assembly programming and Basic or Fortran. The book starts with short simple programs and progresses to more complex ones in later chapters. Each command is introduced with a straightforward, easy to understand example and exercises are contained in every chapter to test the reader's understanding. Basex has been implemented on a number of machines, but, of course, the version for the TRS-80 is highlighted in this book. At the time of going to press, there is one unfortunate snag and that is that although the book is now in stock, the compiler tape is not yet ready from the publishers. They have promised this to us for February 1982 and we must say that in the past their reputation has been good. It may, therefore, be rather a good thing to be able to buy the book first and get used to the architecture and structure of the language before actually using it. Although we cannot, of course, commit ourselves until the tape is in stock, we would expect to be selling at quite a reasonable price, around £20.

THE TRS-80 MEANS BUSINESS

This book is written by Ted Lewis of Oregan State University and comprises an in depth study of the TRS-80 in business applications. It is thought to be the first guide to the Tandy TRS-80 Model II designed specifically for business computer users. It details everything from selecting the right system for individual requirements to programming the TRS-80 in Basic. A wide variety of applications in areas from wages to accounts receivable are discussed. Aspects of file structure programming are described in as easy a fashion as possible and the book seeks to highlight the use of simple explanations of technical phraseology. The criticism that we have of it is that it is written by an American, presumably for Americans, although to our mind this does not detract very seriously from its utility to a U.K. user.

PROBLEM SOLVING ON THE TRS-80 POCKET COMPUTER

This, we fear, is our sole attempt to support the pocket computer as unfortunately we rightly or wrongly do not supply software for it. This book is written by Don Inman, a co-author of TRS-80 and More TRS-80 described above. Mr. Inman is a Professor of Mathematics and we feel that this probably shows through his treatment of the pocket computer. What he seeks to do, and succeeds in doing, is to show pocket computer owners how to solve virtually any problem using their computer. This book is written in what the publishers call a lively and engaging style and it probably is just that. It essentially teaches problem solving techniques using the pocket computer in step by step fashion. A large range of eductional and practical applications are described. Easy to follow demonstration programs familiarise users with the machine's own form of Basic, its keyboard, memory, editing and programming features. Working appendices give essential information on Basic statements and commands, special Basic functions, abbreviations for statements and commands, together with error codes. Like the other books we have mentioned, it is along the lines of a self-teaching guide.

SUCCESSFUL SOFTWARE FOR SMALL COMPUTERS

This book is not for the beginner. Its sub-title is "Structured Programming in Basic for Science, Business and Education" and it is towards structured program design that the book is aimed. The author assumes a knowledge of Basic and devotes the book to program design techniques, particularly structured programming. The emphasis throughout is on reliable design techniques. A criticism of the book is that it tends to concentrate on a comparatively small number of applications, mostly scientific. They are, however, important ones and to a large extent are used mostly as examples to give effect to the underlying theory of structured programming. The subjects covered are many and varied. We were particularly impressed with the chapter on dynamic data structures, that is to say, the linking of lists. The book has apparently been approved by Tandy for the TRS-80 Level II.

USING CP/M

This is another self-teaching guide and is probably a book that is quite widely needed in the marketplace. It certainly has helped us with a number of aspects of CP/M. There are many, many arguments back and forth about whether or not one should use CP/M as a disk operating system, but whatever the pros and cons may be, there is no doubt whatever that the original documentation issued by Digital Research is, to say the least, technically orientated. No doubt everything is in it, after all there are some seven manuals, but we have always had the greatest of difficulty in understanding what the manual author was talking about. The book starts from the ground up, describing CP/M programs, the architecture, disk drives and booting. It then goes into a chapter on the CP/M commands followed by one on 5 or 6 individual commands. After a chapter on transient programs, the following 5 or 6 are dedicated to the major utilities such as PIP and STAT. Machine exercises are contained with all chapters. If you know little or nothing about CP/M and wish to learn about it, then we would recommend this book to you.

PROGRAMS FOR BEGINNERS ON THE TRS-80

This book takes 21 sample TRS-80 programs and, against a background of the Model I, both Levels I and II, and the Model III, illustrates how the programs work. Various program techniques are described, line by line, within the programs. It should be emphasised that the author assumes that the reader has had no past experience in either computers or programming and, as he says in his preface, ''It is not my purpose to teach you what the Basic language is, but to show you how to use the essentials of the Basic language''. Most of the programs are designed to run in 4K RAM in either Level I or Level II. A few screen photographs are used throughout the book which are of use.

DATA FILE PROGRAMMING IN BASIC

This is an extremely useful book which takes one aspect of Basic programming and explains it very thoroughly. The subject is data files and programming to get the best out of them. This is an area that often gives people trouble when they are writing data processing programs. We can do no better really than to quote from the back cover of the book as follows. ''Using the most popular variants of Basic — TRS-80 Basic and Microsoft Basic-80 (with a special appendix covering Northstar Basic) — this clear, non-technical book leads you at a comfortable pace through each step involved in data file programming and maintaining data files, with dozens of sample programs and practical advice to smooth your way. You'll learn how to use the disk file capability of your microcomputer to keep track of billings, customer inventory and expenses, to catalogue material and maintain mailing lists, to process numerical and statistical information, and much more. And you'll be able to write your own programs, modify commercial programs you've purchased, even adapt programs using data files you've found in computing magazines, to fit your specific needs. All you need is an elementary knowledge of Basic, access to a computer, and this unique, self-paced text.''

APRIL LISTING

MEMDISK — ADDITIONAL DISK TYPE STORAGE

One of the less attractive Americanisms is the expression that something ''is the greatest thing since chewing gum''. It is not a saying that one uses very much, but it does have a certain ring about it when describing something very new, very attractive and extremely useful. In this instance we will break our rule and categorically state that Memdisk **is** the greatest thing since chewing gum. Memdisk literally creates a disk drive type storage in RAM. Let us get its least attractive point over first. Obviously, storage is limited. In actual fact, the authors of Memdisk have, if not got over this point, certainly made it as usable as possible by putting in a feature whereby it is possible for the user to define the amount of RAM that he will use for his ''disk drive''.

The idea of having a disk drive inside your memory is not, incidentally, a new one. It is used in many main frame computers but, as far as we know, this is the first program which has become available for the TRS-80 and Video Genie which will perform this function. At first sight it might be thought that it would only have application for owners who at present have single drives. As a matter of fact, this is not so. We have been using it for some time now, and find that it is equally useful in twin drive systems as in singles. The beauty of Memdisk is that the ''drive'' can be accessed with normal disk drive commands, such as ''COPY'', ''BACKUP'', ''FREE'', ''DIR'', ''SAVE'', ''LOAD'', ''DUMP'', etc. Perhaps the first of these commands will be the one most used by single drive owners, because they can insert a disk into their drive, copy a file on to the ''drive'' in memory, change disks and copy it back to the actual physical drive. Another major advantage of a Memdisk drive is that without a doubt it is faster than any floppy drive available and as a matter of fact it is even faster than many hard disk drives.

As we have said, the chief limitation is that there is only a certain amount of RAM available. Thus, the maximum amount of storage usable is 27K. The minimum is 1.5K. Thus, any portion of memory within this range may be defined as a disk drive. Each Memdisk track will consist of 6 granules. The track size is adjustable with one or two sectors per granule. Thus a track will take 1.5K or 3K, depending on the number of sectors per granule you select. The user is allowed up to 19 single sector per granule tracks or up to 9 two sector per granule tracks. Using two sector per granule tracks will provide 80 directory slots, but 16 of these are reserved for System files. When using one sector per granule tracks, the directory space is limited to 32 files with 8 reserved for System. An interesting point is that, space allowing, one can construct several ''drives'' at one time in memory. Obviously space is very restrictive but two drives in memory would be practical. The maximum would be seven but they would be of little use!

Memdisk is only available for the TRS-80 and Video Genie because of the superior facilities contained in LDOS. Hence it is only with that system that Memdisk may be used. Interestingly, the Memdisk drive may be automatically booted with the LDOS SYSTEM (SYSGEN) feature. Finally, just to emphasise that Memdisk involves no additional hardware of any sort. Apart from the obvious economic advantage, it should be borne in mind that the user will have nothing to align, clean, or break! Should there be anything wrong with your RAM, by the way, Memdisk will not load. It does a quick diagnostic prior to installing itself!

SBT — STRUCTURED BASIC TRANSLATOR

This program was introduced by us some couple of years ago in England and although it has been a steady seller, we have often felt that it has not really received the attention which it deserved. It is used widely in the United States and we thought it might be helpful if we included some sales chat which is used over there. The renewed interest in this program, incidentally, is because it is now available for the Model III as well as the Model I. For what it is worth, the sales extract is as follows:—

''you are about to enter a whole new world of computer programming. No longer will you be lost in a confusing sea of line numbers, GOTOs and GOSUBs. No longer will you repeatedly type subroutines that you use often. Instead, you will begin to program in a clear, straightforward manner, a structured manner that yields source programs that will be as easy to understand five years from now as they are when you write them.

Structured Basic Translator allows you to develop this new way of programming — actually a new way of thinking — without having to learn a whole new language. SBT utilizes the features of Basic that you already know and provides a means to make program writing and documentation clearer and more efficient. SBT is not a programming language; it is simply a utility which allows you to write structured programs using SBT ''structures'' called PROCEDURES, CALLS, CASE-CALLS, IF-THEN-ELSE, WHILE and UNTIL. Using the editor, a program is written without line numbers, GOTOs or GOSUBs. The completed program is placed in a disk file, or files, which SBT will convert into an executable Basic program. Before reading further, please note that SBT is not designed for beginner programmers. Rather it is a means of untying the hands of relatively proficient Basic programmers. SBT is designed for compactness and speed: it will translate its own source code in less than five minutes on most systems. The translator is fast enough that you will never hesitate to modify your source code due to fear of a long translation process.''

MORE SOFTWARE FOR THE TANDY COLOUR COMPUTER

SIGMON – MONITOR FOR THE COLOUR COMPUTER

Let us get one thing straight right from the beginning. The TRS-80 has been around for about four years, as also have a variety of other microcomputers. Accordingly, when we nowadays think of a Monitor, our mind goes to a very sophisticated piece of software resulting from 4 years or more development. The Colour Computer is very new and although we do not wish in any way to downgrade this Monitor, we must in fairness say that it does not have many of the more sophisticated features to which we may have become used. The other side of that particular coin is rather unusual. The source code for the Monitor is supplied in the package, so it can be modified, if not with ease, certainly by a moderately skilled assembly programmer. SIGMON consists of 4 sections as follows:–

MONITOR: With the Monitor section you may display memory in Hex or ASCII. Hex or decimal may be entered in to memory/registers. Memory may be moved in blocks from one address to another and data may also be found in memory. Machine language tapes may be read and they may also be written. Printer output is available.

DISASSEMBLER: This is similar to a standard disassembler and displays the address, the Opcode, Operand, Mnemonics and Address expressions for a specific range of instructions.

MINI ASSEMBLER: This utility is effectively a memory editor with the ability to translate mnemonics. Thus it is possible for instance to enter the command ''3000 = 'This is a test' '' which will enter the text starting at address 3000. Mnemonics are entered one to a line so that ''3002 = 'BRA$ 3010' '' will enter that instruction into memory. Do not forget of course that the Colour Computer uses the 6809 Microprocessor rather than the Z80 hence the mnemonics are somewhat different. The package incidentally comes with an instruction set summary put out by Motorola.

DEBUGGER: The Debugger allows Stepping and Breakpoint execution of Machine Language programs. Registers are displayed before and after each step of the program. Nine Breakpoints are permitted. Tracing is permitted in ROM but you are given the option before entering it, for if the Debugger hits an RTS instruction it will wind up back in Basic.

There are one or two commands that we have not listed. The SET will allow you to assign values to any of the Registers and GO is available so that you may go to the program entry point and execute. The SPEED command will set the video scrolling speed. PLOAD will load data from a port. And finally, there are commands to control printing output.

S.E.C.S. – SCREEN EDIT CONTROL SYSTEM

S.E.C.S. is a collection of three programs for use on the TRS-80 Colour Computer. Despite the fact that one of the programs is called ''High Resolution Graphics'' it may be used on the Extended BASIC machine for as you will see shortly, this section is required for the Character Generator. The three sections are as follows:–

FULL SCREEN EDITOR: Before we forget to mention it, this is the only part of the program that can be used on a 4K machine. Its purpose is to add various enhancements to the Basic Interpreter which effectively patches so that when the Editor has been loaded it is transparent to the user. It does not, however, ''patch'' in the sense of a disk operating system. That is to say the program is run once, patches, and then is not used again. indeed , of course, this would be impossible because the Interpreter is in ROM. After the Editor is loaded the new cursor will be displayed and the operator can commence to either load or enter the material which he wishes to edit. The cursor is moved around the screen with one of the 4 arrow keys. The editing commands available are to Insert, Delete, Join Lines, and Relocate Lines. Two additional features are an auto repeat and audible error warning.

HIGH RESOLUTION GRAPHICS: It is difficult to say really that this section of the suite enhances the interpreter because Extended BASIC of course already has High Resolution Graphics capability. You may find that this add on, however, is easier to use, and as we have already said it is essential before the High Resolution Character Generator is operated. With this graphic enhancement you can choose between four separate modes of High Resolution and switch back and forth. The screen may be inverted and Colour, Line and Screen may all be set. A programmable character may also be set.

HIGH RESOLUTION CHARACTER GENERATOR: To our minds this is the most useful part of the suite with the possible exception of the Full Screen Editor. 64 characters may be defined and they may all be saved or loaded to and from tape. Characters, after definition, may be placed on the screen in any colour and in any position. In other words once the characters are established they can be placed on the screen in a large variety of colours and positions. Furthermore, these characters may consist of anything from classical Japanese characters to advanced scientific notation!

PAGE FILE – AN ELECTRONIC BOOK

There are many different types of databases on the market. Some, like ISS, are aimed at a very fast sort. Some, like Maxi Manager and CCA are aimed at a more general market. Page File falls somewhere between the two. It is to some extent a specialised database in the sense that its format is quite unique. On the other hand, it can be used for general purpose storage of data. The title ''Page File'' is an extremely descriptive name for a program which essentially is a book of pages, each of them constituting a file. If you can imagine a loose-leaf binder upon which you can at will write whatever you wish and then turn to another page and write something else, turn back if you wish and see what you had previously written, and so on, then you are getting pretty close to an understanding of Page File. Its beauty and its uniqueness has to be an entire format of the file.

Provisions, of course, are made to search the book. All one does is to enter in the alpha-numerical word or collection of characters required and instruct the search. It will then come up with the first occurrence and you may then proceed to further occurrences if the first one was not the one that you were after. An important feature is that the search is of an INSTRING nature, that is to say, part of the word may be entered to find a full word. As always with these INSTRING searches, however, do not make the string too short or it will stop at every word. The editing features are quite comprehensive. First of all, a page may be deleted, in which case, of course, it will leave a blank screen for that page. This may be filled up with other data just as an ordinary page in a book. Incidentally, we should have mentioned before that when you are writing your page you have facilities for tabbing.

The next editing feature is that there is a type of re-pagination, that is to say, if you are on, for instance, Page 4, you can re-number that page to Page 10. The program will not incidentally let you over-write the exisitng page without warning you of the dire consequences thereof. The page that you have left, in our example, Page 4, becomes a blank page. The next editing feature is the ability to insert. This is somewhat similar to the method that we have just described, but instead of simply over-writing the target page, the program moves the intervening pages up one, to make room. Thus if we were to insert Page 7 on Page 4, Page 4 would become Page 5, Page 5 would become Page 6, and Page 6 would become Page 7. One useful application and example of this function would be if, for instance, Pages 2-5 contained your address list and Page 6 is the start of vegetable garden plans. Your address list is full and you need to add more entries, in other words you need to slot in an extra page following Page 5. So long as your book is not full, you simply take a blank page from the end of the book and insert it at Page 6. Your list now runs from Page 2 to Page 6 and your garden entries begin on Page 7. Just in case there should be any misunderstanding, the move above was of a blank page to give one further space in the address list. There is another command which will allow the exchange of pages whether they be blank or otherwise. In other words, a full Page 7 may be swapped with a full Page 4, whereupon 4 becomes 7 and vice versa. We have, in the description of the editing mode, really left the best until last. The COPY command allows one to copy one page to another. Although at first sight this does not appear to be important, a little thought will see how useful it can be. Think, for instance, of a programming aid. Various companies sell charts to aid in basic programming. With Page File it is only necessary to construct such a chart once. It can than be copied to other pages and if one wished, one could have a book full of basic programming charts. It is not difficult to think of other uses. Essentially, whenever you need a duplication, use COPY. In case you may think that this is a dull book, you must think again, because the author has included facilities for drawing diagrams, pictures, borders, and indeed any other graphic portrayal within the capability of the machine. Once again, one should give this a little thought, and when combined with the previous mentioned command of COPY, it has obvious advantages in many many different trades or professions, but even apart from this utilitarian application it is, as they say, fun for all the family. With the command graphics mode the cursor is set in the centre of the screen. It is moved around by using the numeric keypad. As these keys

are, of course, wired in parallel to the normal keys at the top of the keyboard, these keys may be used if you do not have a keypad. Without a doubt, however, the keypad does make life a little easier. If, as you move the cursor, you hold down a certain key, you will draw a line and the same facility is available for erasing an existing line. The graphics cursor erases any text characters, so if you have a mixed page, then it is better to do the graphics first and then insert the text.

JUNIOR UTILITY – NOW ON DISK

Elsewhere in the catalogue is described the Junior Utility which is a comprehensive two pass disassembler. Up until now this has only been available on tape, but we are now able to supply a disk version. This, incidentally, is otherwise known as the Misosys Disassembler. It was written by Roy Soltoff who also wrote EDAS, the Editor Assembler again mentioned elsewhere in the catalogue. This disk disassembler is mentioned in the EDAS instructions.

FLIGHTPLAN – FLIGHTPLAN FOR LIGHT AIRCRAFT PILOTS

The first thing to be emphasized about this program is that it is written by an English pilot, hence the data which is stored in the program is relevant to England. The function of the program is a straightforward one. It will produce an accurate flightplan of up to 8 waypoints for light planes. An important feature is that it can use data for airfields and beacons either from its stored data statements, or from data input by the pilot at the keyboard, or from both. The author has included in the instructions guidelines on the method of changing the waypoints in the data statements. Thus, additional or alternative waypoints may be stored to suit any particular pilot. Information will be required for each waypoint and will consist of its name; latitude in degrees and minutes plus direction; longtitude in degrees and minutes plus direction; magnetic variation direction and magnetic variation angle. Use of the program is nice and simple. The first piece of information to be input is the number of waypoints. These will include the departure and destination and up to six others. You will then be asked whether you wish to use one of the stored waypoints for the departure point. If the answer is affirmative, you will of course have to name it. A nice convenience feature here is that you can type 'L' in order to examine the list of stored waypoints. If you do not intend to use the stored data then you will have to enter the information for whatever one you are going to use. This consists of the name, the latitude and longtitude and of course directions, thus 51, 33, N. Magnetic variation must also be entered. When all of the waypoints have been entered, the wind vectors should be inserted together with the true airspeed plus fuel rate and time of departure. Thereafter, the computer will do its thing and you may choose output either to the screen or the printer. Provision is allowed for further copies of the hard-copy which is particularly useful for flying instructors wishing to send more than one student on the same standard navigation exercise. The program uses spherical co-ordinate trigonometry to determine the Great Circle on which the two locations lie. This will produce the shortest distance between any two points on the earth's surface, and is more accurate for long range navigation than is the Rhumb line method. Accuracy does suffer, however, over very short distances. All in all, a very nice and useful program for those customers who are lucky enough to own a computer and use a light aircraft.

BRIGHT AND EARLY – WOULD YOU BELIEVE – IT IMPROVES MATHS SKILLS!

This is a program to instruct children of between the ages of 6 and 12 in the skills of the science of mathematics. There are five individual learning programs in the package with graphics and sound effects. These five programs (again, we did not invent the titles!) are as follows:-

Add-a-pet	Addition drills
The Big Boom	Subtraction drills
Space Man Math	Multiplication drills
Moon Lander Math	Division drills
Basic Math Facts	Flash Card review

The note on the right indicates the function.

These are quite good programs for the youngsters and they will certainly keep them interested in the subject at hand. In the first, one collects pets in a pet shop and thus learns additions. In the second, subtraction skills are honed to a fine edge with the graphics and sound effects of the Big Boom. Multiplication rears its ugly head in the Space Man Math in which a space man is freed from a mountain. Rockets are launched to the moon if the child knows its division rules, and finally basic facts of mathematics are featured in the Flash Card review.

MONEY MANAGER – A PERSONAL FINANCE PACKAGE

Owners of previous editions of our catalogues, that is to say, earlier than the typeset one, will have on Page 24 a program called "Home Budget". Although this was quite an extensive piece of software, it was also rather highly priced. We have now replaced it by this present program which in fact has one or two additional features and is of lower cost. Indeed, this is another example of an American program where we are now able to sell the program in England for the same price as it is sold in the United States. Money Manager is a complete management tool for the home budget, helping to keep track of your income and expenditure and providing an easy method of budget allocation. The outgoing money is categorised into accounts that you design according to your needs. It provides a means of keeping complete, accurate records including itemisation of tax deductible expenditure. Information on up to 250 cheques per month can be maintained on a 48K machine. Standing orders or direct debits may be specified and cheques made payable to credit card companies, department stores and similar entities may be broken down so that each individual expense can be categorised. The program of course supports a line printer where formatted printouts may be made by category and time period. The program is menu driven and perhaps the best way of describing the features of the program is to list this menu as follows: –

ADD NEW ENTRIES TO THE FILE	REVIEW CATEGORISED ENTRIES
DELETE/MODIFY CHEQUE BOOK ENTRIES	REVIEW DEPOSITS
REVIEW ANY CHEQUE BOOK ENTRY	REVIEW BANK CHARGES
CHANGE/DISPLAY BALANCE	REVIEW MISCELLANEOUS WITHDRAWALS
PRINT ALL CATEGORISED ENTRIES	REVIEW OUTSTANDING CHEQUES
RECONCILE CHEQUE BOOK	MODIFY/LIST CATEGORIES
REVIEW COMPLETE CHEQUE BOOK FILE	DISPLAY CATEGORY/MONTH MATRIX
REVIEW CHEQUE BOOK FILE BY MONTH	

Finally, we would like to emphasise that the ability to establish your own customised categories reflecting your own needs is one of the most important features of this program. Obviously it cannot decide how much you should spend on what. Indeed, Money Manager is not a budget making program as such, but once the categories have been decided, they could be used to monitor how well you are keeping to your budget.

ADMIRAL GRAF SPEE – A WAR GAME ON THE RIVER PLATE

The author says that two intentions lay behind the design of "Admiral Graf Spee", firstly to produce an accurate and realistic simulation of the Battle and secondly to include sufficient user interaction so that the player feels he can control all aspects of his ship's situation, except of course for the damage suffered. The history of the Battle of the River Plate is as follows: –

> "The Battle of the River Plate commenced at 06.14 hours on December 13th, 1939 off the coast of Uraguay, between the German pocket battleship 'Admiral Graf Spee' under Captain Hans Langsdorff and Force G of the Royal Navy under Commodore H. H. Harwood. The significance of the outcome lay not so much in the military ramifications as in the diplomatic effects of a battle fought at the start of the war on the many countries still neutral.
> Although Force G was missing a ship refitting at the Falklands, Harwood decided to attack when the raider was sighted. Two light cruisers (sister ships Achilles of New Zealand, flagship, and Ajax) and the heavy cruiser Exeter were, however, no match for the 11-inch guns of the Graf Spee. Concentrating her fire on the Exeter, whilst holding off Ajax and Achilles with her secondary armament, the Graf Spee soon turned the Exeter into a floating (just) wreck.
> Even though Langsdorff made no attempt to maintain a safe distance to outreach his opponents, and frequently switched targets (so reducing the rate of fire), the Ajax soon lost two turrets and the Achilles was also damaged. No vital damage had been inflicted on the German ship and ammunition was running low aboard the Ajax and Achilles. With the Exeter forced to break off the engagement, Harwood was forced to shadow the Graf Spee into Montivideo harbour at a distance.
> Thinking that a substantial British force was awaiting him in the Atlantic and finding himself in legal difficulties in the neutral port of Montivideo, Langsdorff made arrangements for the Graf Spee to be scuttled in the harbour on December 17th. Shaken by losses to his crew, the loss of his command and the reaction of Hitler (quoted as 'very angry'), Langsdorff shot himself, draped in the German ensign, on December 20th."

The program is written in Basic and after the program is entered, the initial map display shows the relevant positions of the ships, with the Graf Spee always centrally disposed. General information about the Graf Spee is displayed and exact details of Force G. The initial positions, speeds and headings are based on the historical position at first sight with a random element for each new game. The valid orders include the fire of a Salvo; calling up of the map display; information on the ship; speed and course change; launch torpedos and exit.

SALES LEDGER 1 – A MAJOR NEW ACCOUNTING PROGRAM

It is not often that major new programs come about, particularly in the Accounting field. Indeed, Tridata has almost monopolised this field, at least for the TRS-80, for some time. It is fair to say that Prosoft, the authors of this new software have, as is quite legitimate, benefited from the experience of previous accountancy package authors. In other words a lot of the criticisms which are viable regarding existing accountancy packages have been eradicated in this new Sales Ledger. Also, we should make the point that this product is intended to be the first of a series of interlocking packages. It is compatible with both the Model I and Model 3 TRS-80 and also the Video Genie, Model 1 and Model 2 Genie it requires two disk drives. In the main, our discussions will revolve around the Model 3 TRS-80 machine, but all of our comments will essentially be relevant to the other Microcomputers.
Sales Ledger 1 is a comprehensive and simple to operate Balance forward Sales Ledger which features minimum access to disk and, therefore, high speed operation together with a very high degree of "user friendliness". Having studied previous Sales Ledgers the authors felt that one of the major problems was the necessity to be continually swapping disks. This has been kept to a minimum and as a matter of fact if you are running less than 400 accounts no swapping will be necessary. The maximum capacity of a data disk is 400 customer accounts which may contain up to 2030 transactions in any one month. Multiple disks may, of course, be processed up to a maximum of 32 disks. The program disk is normally resident in drive 'O' and the system controls the account range of each data disk, maintaining a record of that account range on the program disk in drive 'O'. This ensures that account numbers cannot be duplicated and that all data disks have been entered through the system as, for example, is required in the Statement production run.
Ease of interface for the operator is a much maligned assertion in software Sales literature but we would like to emphasise this aspect of Sales Ledger 1. The user is guided through every stage of the operation by means of Menus and extensive on screen information. In addition to this prompting from the Microcomputer a comprehensive Manual is provided giving details of all the operations and advice on the type of forms and paper to use. A wide range of error checking has been included so that it really can be said that if you can enter the data into the program it is bound to be acceptable to it.
Prosoft have developed a unique system to guide the operator in every point of input via the screen. They call this IMFSI which is an anachronism for Input Mode and Field Size Indicator. It seems almost obligatory for software authors to complicate matters by using this type of terminology and we would like to emphasise that such "complications" in no way reverse the ease of use of this program. For instance, whenever input is required from the operator IMFSI displays a number of light blocks equivalent to the maximum number of characters that can be input for that field. As data is input the light blocks are switched off and if you backspace, characters are deleted and the light block switched back on. Using these little blocks continually tells the operator how much he or she has left for input. A particularly good feature is that at the top right hand of the screen IMFSI always displays an "A" or an "N". The former indicates that all characters may be input and the latter that only numerical characters are accepted. In addition the operator is informed of the number of characters that may be input.
In other words Sales Ledger 1 starts off with one very big advantage that many other accountancy packages do not have, and that is a complete integration with the user in a friendly and co-operative way. One never feels that one has to battle with the machine, rather, that the machine is co-operating with the often inexperienced operator.
So far as the accounting side of the program is concerned, Sales Ledger 1 supports mixed postings, that is to say, invoices, credit notes, cash/discount, journal debits and journal credits, and with day book production as postings are made. During the postings input the amount of available transaction space for the data disk that is being used, is permanently displayed – another nice convenient feature. The day book is summarised at the batch end with the option to continue posting in the event of the summarised totals not agreeing with a pre-list. Most important for accountants is the fact that automatic batch numbering ensures that audit trails are maintained in strict numerical order. Accounts which extended over the personal credit limit are reported both on the screen and in the day book.
Statements may be produced as interim or Month End. Interim Statements may be produced one off or by range and do not affect the current postings. Options are available to print a 50 character message on each statement and to print the account balance over a period of the current month and 3 later ones. In other words an ageing report. Month End Statements automatically clear down the current transactions and age the balance. Continuation statements are automatically adjusted. The following reports are available: –

a. Age debtors report for all accounts starting at one month old and over and ending at 3 months old and over.
b. Accounts over credit limit, showing account number, name, telephone number, account balance, credit limit and amount
b. over credit limit.
c. Accounts may be listed in either account number order or alphabetical order.
d. V.A.T. Reports, interim, month end and year to date. The V.A.T. report also reports the turnover to date balance and the
d. control account balance.

Options are provided to automatically produce name and address labels (for a two up form) for the following: –

1. All accounts.
2. Accounts one, two or three months overdue.
3. All accounts over credit limit.
4. All customers on each data disk.

As can be seen from the above, this is not only an extremely easy program to manipulate and use, but it also does all of the most commonly asked for options featured in sales ledger programs. We are quite enthusiastic with regard to this new series and we are in the process of having some literature printed. Accordingly, if you require any further details, you have only to ask for this pamphlet.

MEDIEVAL MAGIC – A JUNIOR ADVENTURE?

Some people complain that the Adventures, particularly the English Mysterious Adventure series by Brian Howarth, are a bit hard when it is the first attempt to play such a game. For these customers we are producing Medieval Magic. It is a true Adventure, but lacks some of the intricacies of the more normal type. The literature from the authors in the United States says "If you've ever been 'turned off' by the perplexity of the advanced games available, here's the Adventure for you!". We really have not got much more to add to that, it is a fair description.The scenario is along the lines of the earlier Adventures in that the player is a seeker after fortune in an imaginative castle. Gold and precious gems are the prizes for outwitting the dragon and other ghastly apparitions. It is a perfectly good Adventure, but aimed at those who are just starting on such a career!

FILTER PACKAGE – 13 USEFUL FILTERS

One of the important features of LDOS is its ability to access what are called Filter Drivers. The Disk Operating System comes with one or two. The remainder have to be written by the user in Assembly Code. This is sometimes either a chore which the user does not wish to undertake, or may possibly be beyond his capability. This collection of filters has, therefore, been provided and any one of them may be called by LDOS. An interesting feature of this package is that the source code is provided for each filter. Apart from the filters being very useful in application, therefore, the source code gives a great deal of insight into how one should write these little programs. The filters and their descriptions are as follows: –

CALC/FLT: This is a Keyboard filter which will perform Hex/Decimal/Binary conversions and it will also do Hexadecimal mathematic functions of add and subtract.

LINEFEED/FLT: This is an easy one. The filter will either add or remove a linefeed after each carriage return.

LISTBAS/FLT: This filter takes a BASIC program and separates all multi system lines into individual statements and expressions. It is of course entirely a matter of taste whether this is more meaningful to any particular user. Using BASIC all the time, one tends to forget that its line number orientation is quite unique. Authors who frequently use other high level Languages are more used to seeing statements without line numbers. A sample line such as 100FORX = 32TO64:PRINTX;CHR$(X);CHR$(INT (X + (Q*64)/7.5)):FORY = 0TO200:NEXTY:NEXTX after being processed will finish up as

```
100 FORX = 32TO64:
        PRINTX;
        CHR$ (X) ;
        CHR$ (INT (X + (Q*64) /7.5) ) :
        FORY = OTO200:
        NEXTY:
        NEXTX
```

As we have just said, which presentation appeals to you most is purely a matter of taste. Anyway, with the filter active the printouts will be transformed to the second example.

LOWER/FLT and UPPER/FLT: These two filters convert alphabetic characters within the range A-Z to either all upper or all lower case characters.

MONITOR/FLT: This filter will monitor a specified device and display special symbols for all non-ASCII characters. It can be used on any device capable of output and will display non-ASCII characters in the following manner:

(a) Any character less than the value of a space, that is to say, 20H will be displayed as a percent sign followed by an ASCII representation of the character value + 41H. Thus ODH will be displayed as %N; OAH will be displayed as %K, and so on.

(b) Any character greater than 7FH will be displayed as the character 5BH. This will be either an UP ARROW or a LEFT BRACKET depending on your computer and/or your type of output device.

The Monitor filter is particularly useful when it is suspected that control characters not normally visible are being sent to a device.

PAGEPAWS/FLT: This is a rather nice one, if only for the cute name. It is of course pronounced 'Page pause'. Its function is to cause a pause after every top of the form character. It will wait at this point until the 'ENTER' key is pressed.

REMOVE/CMD: This is a utility rather than a filter and it is provided to remove a specific character value from a file. It is essentially a copy utility. It will strip a character out of the file being copied. For instance it might be used to remove the character OOH from a file to be loaded into SCRIPSIT.

SLASH0/FLT: So long as your printer is capable of backspacing, this filter will enable a slashed zero to be printed.

STRIP7/FLT: This filter will strip the high bit off each character passed through the filter. In effect, of course, this converts any characters outside of the ASCII range to ASCII. It may be applied to any device capable of output which makes it rather useful.

STRIPCNT/FLT: This filter replaces any character above 7FH or below 20H with the hash sign (#).

TITLE/FLT: This filter is useful only for the printer and will allow titleing of printed output. The user may enter any title up to 20 characters long which will thereafter be printed after the top of form on every printout. Additional parameters are the date and time which may also be added.

TRAP/FLT: This filter will trap and throw away a specified character each time that character tries to pass through the filter. It may be used with any device capable of output and has a great many applications. The Cursor On character for instance (OEH) causes some printers to either start underlining or to go into the expanded print mode. These can be trapped and removed. Another application would be to remove any 17H characters which sometimes switch the Video into 32 character mode inadvertently when using the RS-232 interface.

XLATE/FLT: This is a translation filter program and enables code translation within the I/O path of any device so as to adapt to non-ASCII peripherals or apparatus requiring special codes. The program adds certain enhancements to the entire operation of LDOS. By providing the user with an easy means of translating data in an I/O channel, greater versatility in "talking" to peripheral equipment is achieved. Included on this filter disk are two translation table files allowing for the translation of ASCII to EBCDIC and vice versa. The second table allows for the conversion of the keyboard to a DVORAK keyboard. Users may also create their own translation tables to be used with this filter. For example, printers containing special character sets can be supported by translating unused codes to the special ones. This is perhaps the most complex of the filters and some 6 pages of the documentation (which incidentally amounts to 22 pages) is taken up with it.

MONITOR – MONITOR YOUR INPUT OUTPUT ERRORS

This is a straightforward program in operation, although no doubt somewhat complex in the writing. Like a number of programs nowadays it takes advantage of the sophisticated features of LDOS and is, therefore, only useable with that disk operating system. The purpose of Monitor is to intercept any disk READ/WRITE errors and offer the operator certain options. When an error is encountered, Monitor will display the standard long form LDOS error message. Included in this will be the error number and description together with the file specification in question. The user will then be given a number of options. First of all, to ignore the error. Secondly to re-try the operation again. Thirdly, to continue by returning to the application program, or finally to abort and exit to the normal LDOS READY message. Ignoring the error will cause Monitor to cancel I/O error code and continue with the operation as though no error had occurred. This is useful, for instance, when the error has been due to faulty data on a disk. Ignoring this error may allow the operator to continue and recover further sectors of a bad file. The re-try facility is self-explanatory. The system will re-try the I/O attempt which caused the error. You may continue to re-try as often as you wish. This option is particularly useful when the cause of the problem was the connector between the keyboard and the interface on a TRS-80. Quite often by the time a re-try is made, the intermittent connection will have rectified itself. Choosing the 'continue' option will allow the application program to continue in its normal input output path. Frequently, this will cause the normal error handling of the calling program to take over. This is a useful facility, particularly so when critical programs or applications are being run, and it is important that the I/O path should remain intact or be used in one of the ways described above.

CONV CPM – CP/M TO LDOS TRANSFER UTILITY

In that we support all programs written for LDOS we are stocking this utility. We should point out, however, that it has little application to the TRS-80 machine although it may well have such application to the new Model III Genie, when it becomes available. CONVCPM allows the user to transfer files from certain CP/M diskettes on to an LDOS formatted disk. The CP/M formats supported are standard 8 inch single density and 5 inch single density (Omikron). Note, therefore, that the TRS-80 Model II CP/M is not supported as it is a double density. The reason for this, incidentally, is that all known CP/M versions modified for the Model II have got a similar utility already installed. The utility provides many different parameters from which to choose the type of file to be moved. The file specifications on the CP/M disk must conform to LDOS file specification standard but as these standards are in fact standard in the industry, they should give no difficulty.

FAMILY TREE – TRACE YOUR ANCESTRAL ROOTS

Paper-based genealogies are firstly very susceptible to error and secondly the very nature of the task leads to bits of paper all over the place. Indeed, when you come to think of it, the tracing of a family tree is a natural for a microcomputer. For professional genealogists, the program will cope with multiple family trees, so that charts and diagrams may be prepared for any number of clients. Keeping the family tree permanently on cassette or disk gives complete ease of update to the user. The tracing of a tree inevitably causes many many corrections as additional data is found. When the tree is permanently available on the computer, such corrections may be carried out swiftly and neatly, leading to far less errors. Each record contains an ancestor's name, year and place of birth, marriage and death. Provision is also made for comments and an indication of the person's position in the family tree being traced. Direct ancestors only are accommodated by the program, that is to say, parents, grand-parents, great grand-parents, etc. to the limits of your family history or the computer's memory. Uncles, cousins, nieces and second spouses are peripheral to your family tree. However, you may elect to use the comment area of your ancestor records to include siblings. Once all the ancestor records are inserted into the computer, the hard work is done and the program will display several options as follows: –

a. A three generation ancestral chart may be displayed on the screen, based upon any person you select.
b. A pedigree may be displayed listing a single line of descent (with spouses) for any chosen ancestor.
c. The records may be searched for full or partial names by country, county of birth, marriage or death. Searches may also be
c. carried out by year, decade, or century of the birth, marriage or death.
d. Comments may also be searched for commonalities in whatever characteristics the user has chosen to place in his comments,
d. for instance occupation or religion.
e. Printer output is supported so that a paper version of any chart, pedigree or list which the user creates may be produced in
e. hard copy. For instance, if you want to maintain a printed family tree, this will end laborious paperwork as you add new
e. findings. The computer can produce a full or partial set of fresh ancestral charts each time that you provide it with your latest
e. updates. The ancestors will be numbered automatically and uniquely so that there will be a clear linkage between pages.

As an indication of the capacity, a 16K cassette based TRS-80 or Genie should be able to accept about 50 ancestor records, although this will of course depend upon the length of the names and the comments. A 32K disk based machine should hold 100 records equally easily. Quite a full manual is supplied and this is required because, with a program such as this, instructions as to the entry of data statements which have to be inserted into the program are useful.

SAUCE – NOW AVAILABLE FOR CP/M

It is difficult to reference pages in the catalogue at the moment and will be for a little while because of the change of format, but if you have the old catalogue, on Page 134 you will find a reference and description to a Disassembler for the Model II. This is a full feature Disassembler intended to compliment Edit-80 and Macro 80 running under the Model II TRSDOS. Robert Bradford, the author, has now re-written Sauce so that it is compatible with CP/M running on the Model II. There is very little difference between the two versions and for a description, customers are referred to the earlier description.

PDS – PARTITIONED DATA SETS

We seem to keep on saying this in this present addition to the catalogue but again this is a program which is only possible because of the features of LDOS and hence it is compatible with that system only. Many of the structural features of LDOS are of course completely hidden from the user. This, of course, is as it should be. Essentially a person using a disk operating system is not concerned with how the function comes about, but merely with the result. It is for this reason that our descriptions of LDOS and indeed other complex programs have, as far as possible, kept to a description of the features. Such a course is a little bit of a pity where really sophisticated software is concerned because the technicalities of programming such utilities is quite fascinating. Anyway, the reason that we have gone into this digression is that LDOS does, in two of its System files, already use PDS, which incidentally is not a new technique to computers. They have been used very widely, particularly on mainframe computers for some considerable time. That being so, what are Partitioned Data Sets? Katzan, in his book "Operating Systems, a Pragmatic Approach" defined a Partitioned Data Set as "a data file that is divided into sequentially organised members", which is probably a prime example of computerese if ever there was one. Let us see if we can translate it into English. It frequently comes about in computer programs and particularly utilities that a given file will take up a small amount of space on the disk. A disk operating system has a minimum space allocation and, therefore, a large number of small files on a disk can fill it up, when in fact almost half of the disk could be blank space. PDS is a method whereby a lot of little files are amalgamated into one bigger one. This has the big advantage of saving valuable disk space, but also means that much faster access times will be available to the user. Now that we are getting into 80-track and double density not to mention double sided drives, any increase in access speed has to be advantageous. A PDS file maintains its own mini-directory inside of itself and thus when a mini file is called, the system goes to this directory to see if it is in the PDS file. Thus in summary the PDS structure has provided a technique for combining separately executable programs into one file.

MARQUEE – A SIGNBOARD PROGRAM

We have in the past stocked two programs which may loosely fall into the "Signboard" category. This new one is of such good quality that we are discontinuing the original Signboard. The other program of a similar nature of course is Blackboard. The Blackboard program simply takes the place of a blackboard, giving a static display, whereas Marquee reminds you of the advertisements merrily trilling around Piccadilly Circus. The principal feature of Marquee is the fantastically large buffer provided, thus making it possible to have messages of many thousands of characters apparently revolving around the screen. In fact it is so large that we imagine it would be possible to compose some type of attention-getting puzzle or instruction, such as "wait here until you find this letter". For you can have a static message on the screen at the same time as the revolving one. We would not have thought it would be difficult to come up with a very arresting message or puzzle with such a large buffer to play with. Another advantage is that you may elect to have a 24-hour digital clock of hours, minutes and seconds displayed at the bottom of the screen. Incidentally, both the characters for this and for the Marquee message are about an inch high. Personally, we have never been particularly impressed with clock programs unless the built in clock in the expansion interface is used, which in this case it is not. Hard as one tries over a period of time it is pretty well impossible to achieve accurate time-keeping, particularly on a variety of specimens of machine. All in all, then, this is a very good attention-getting signboard type program with the added features that (a) you can if you wish have a clock, and (b) the size of the buffer promotes a great deal of versatility.

SOLE – BOOT UP IN DOUBLE DENSITY WITH LDOS

For various complex reasons LDOS as it is supplied is unable to boot up in double density. To fill in a little background here, many double density systems have a double density disk but a single density first track. A prime example with which we are probably most

familiar is the Model II TRSDOS. Thus the machine carries out its actual boot from single density boot but then switches over to double. As we have said before, this was not possible with LDOS for certain internal reasons. However, Sole enables exactly the above to be done. It is a utility in two parts and when the double density disk is treated by it you finish up with a double density disk with a single density first track. The beauty of Sole is that once done, it can be forgotten because normal mirror image backup will recreate duplicates of the disk with this feature included. In other words, you commit your Sole only once!

MINI UTILITY 2 – SPEED UP RELOADING

This is the second in our series of mini-utilities. The first one was for changing PRINT statements into LPRINT statements and therefore is features elsewhere in the catalogue. This one comes about by reason of the deathly slow speed of loading and saving data tapes into memory. Arrays loads snugly at the top of the memory and takes over the loading and saving of the arrays. The commands LOAD and SAVE are used and included in your Basic program. When they are called, the machine language mini-utility takes over and speeds up the LOAD or SAVE. Two dimension Arrays are acceptable. A handy little tool.

GUESSWORD AND WORM – TWO LIGHTPEN GAMES

This is a very funny business to be in. Some eighteen months ago, we introduced a low cost light pen and sat back and waited for people to submit hundreds of programs to be used with it. The pen sold, and sells well but we have had very few submissions as to software to run with it. Luckily Mr. Reavley of Nottingham has taken pity on us and we are therefore publishing these two programs which we must emphasise are only for the light pen. They are both contained on the same tape. Guessword is a children's game, although some adults may well find it of interest and gain enjoyment from it. Its purpose is to make up words from letters supplied by the program, which may not appear to be very difficult until one knows that you cannot see the letters. Each one is guarded by a light pen Pixel. You choose the pixel's entry point and hope to remember where the lines are. When ready you then make your choice and hopefully construct a word.The Worm game is essentially a board game. The purpose of the game is to conduct the light pen in such a way that your opponent, that is to say, the computer cannot move. The program has a look-ahead feature built in so that it is not just a dumb machine sitting there looking at you. All in all, an enjoyable game to play, and perhaps of more appeal than Guessword.

TELEPHONES

Over the last few months we have received some comments from customers that they are unable to get through on our present telephone lines. With the co-operation of Telecom, therefore, we have installed an entirely new system. This will provide us with a number of different lines and features. We will, therefore, oe obliged if customers will note that our 223636 is a multi-line and callers are guaranteed to obtain a connection by using this number. 220391 will, of course, be retained and we must emphasize once again that this is the only line to which an answering machine is connected after hours.

SMART TERMINAL

This is available both for the Model I and Model III Tandy machines. We should take this opportunity to re-confirm that Smart Terminal is not, at the present time, compatible with the Genie machines, due to the difference in the RS-232 interfaces. The enhancements are as follows:-

1. Options for transmitting and receiving a program with verification are now included.
2. The sub-system menu has been greatly improved and now includes a status report on the memory statistics.
3. The screen contents are now saved whilst the sub-system is in effect and restored on return to the communication status.
4. A new ''Save Program'' option has been added for making backups containing various personal options.
5. The Read File and Read Cassette commands have an option for setting bit 7 of the incoming data to zero, thereby converting any file read to ASCII form.
6. The line print echo command is now buffered so the characters are not lost when printing in communication status.
7. The previous delay loop in the Model III version necessitated by the Model III ROM RS-232 software has now been removed, allowing transmission at the full speed of 1200.

AJEDIT

The actual program in this package has not been changed but the documentation has. We have never published a program and received so many comments on the documentation as has occurred with AJEDIT. Some customers have been quite explicit in their complaints that the documentation was too technical and other customers have thanked us for providing a manual that does not assume that they are beginners. In view of this serious split of opinion, we have now produced another manual written from the beginner's point of view. Two manuals are, therefore, now supplied with AJEDIT. Any existing owners of AJEDIT who would like to receive the new manual need only send in their request, together with the serial number of their copy of the program. There is no charge for this service.

ELECTRIC ACCOUNTANT

The 9 version of Electric Accountant is now released. Two enhancements have been added. Firstly, to permit more records, 250 per month, and secondly to allow the program to accept VAT amounts less than the current VAT, for instance, if discounted.

LDOS 5.1.2.

The enhancements to LDOS in the 5.1.2. update are different for the Model I and the Model III.

MODEL I

BACKUP has been changed to allow for the cancellation of the Query parameter during Backup. The Format utility has a new parameter which will insert a delay. This is to make up for certain deficiencies in some 80-track drives, it is not normally needed. KI/DVR has been significantly changed. Two new parameters have been added, one allows for the insertion of an initial delay between pressing a key and the first repeat. The second is a command to allow for changes in the key repeat rate. KSM/FLT also has a new parameter permitting the setting of any character to be used as an embedded enter key. LBASIC has a new parameter permitting the use of a default extension/BAS during certain operations, particularly the LOAD, RUN, MERGE and SAVE.

MODEL III

There are a large number of changes to the Model III, the most important of which we will mention. Patch files for Scripsit and Visicalc are now included on the Model III disk. Also a new file contains an enhanced Scripsit patch which makes use of the keyboard driver of LDOS. A utility for setting the default values of floppy drives is included which is normally only used when hard drives are also in the

system. The Device command now shows whether VERFIFY is on. The Directory command has two new options. One is to sort the Directory into alphabetical order and the second is to just display files with the MOD flag. The SYSTEM library command has four new parameters. One enables or disables the date prompt when booting, and the other does the same for the time prompt. Due to the present proliferation of drives on the market, the most useful command is the ability to set the Bootstrap step rate used by Format. The final additional SYSTEM library command sets the default cylinder count used by Format. The Backup and Format utilities have been changed in the same way as the Model I. Various default values have also been changed in Format. LCOMM has been considerably enhanced. In particular the translation parameter has been changed to permit the translation of both a send character and a receive character. a further parameter added is the ability to prevent any nulls (that is to say 00) from being received. The Keyboard driver has been changed. First of all in the same way as for the Model I but in addition an extended cursor mode (ECM) has been added and all 128 ASCII characters are now available from the keyboard. Abbreviations have been added for existing parameters. The Ksm filter has a new parameter as with Model I, and the Minidos filter has a new key available for sending characters directly to the line printer. The printer filter also has one new parameter so that the anomaly of 66 lines per page with a start at 0 for the Model I versus 67 and a start line of 1 for the Model III has been allowed for. LBASIC now has the new parameter mentioned for the Model I and in addition RUN ''filespec'', V will now save any fielded variables used on the random files.

ISS 3.01

Considerable enhancements have again been made to ISS. They take two forms. First of all, previous incompatibilities between disk operating systems and, to a lesser extent, machines, have been eradicated.All of these comments, incidentally, refer to the disk version. There is now only one version for the Model I and Model III TRS-80 and the Genie machines. Instant Sort Search is not really the sort of application program which needs to be run under a customer's working disk operating system, and it is recommended that it be run under the DOS on which it is supplied. However, incompatibility between ISS and alien DOS's have now, for the most part, been eradicated. It is, for instance, now compatible with LDOS. A rather nice feature which has been incorporated by the author Gordon Hatton is that if ISS finds itself in an environment with which it is not familiar, it will not simply produce error messages or hang but will display a notice on the screen that it is not compatible with the DOS in which it presently resides. The most important improvement really goes to the heart of the ISS concept. Throughout its life, it has been a columnar orientated data base and hence the data to be input to it has been restricted to that which, minus certain overheads, will fit into a 64 character VDU line. By way of some very clever programming, this has now been changed, and the program will accept, and display, extended lines of up to 128 characters. The way that this is done is that at the beginning, for instance, of a sort/search routine, only the first set of columns will be displayed. However, a touch on the right arrow key will bring in the next column and the next, and so on. As columns appear from the right hand side of the screen, they of course, disappear on the left. If you will - column scrolling. The process which, as with anything in ISS is instantaneous, can be continued until the last column is reached or the process is reversed with the left arrow. The maximum number of columns remains at 10. The speed of ISS is not appreciably slowed down, and no extra file memory is used. The standard sort time with random data remains at 1 second for 500 records and about 2 seconds for 1000. As many users will wish to include more columns where sorting would not give any meaningful results, the option has been included to specify any column as not being a sort key. Entries in such columns are not subject to validity checks and any character or punctuation mark may be included in them. In addition to the above, and following on by reason of it, the printer output has been changed so that instead of the previous Screen Print, individual records are now displayed on the top two lines of the screen whilst they are being outputted to the printer as a single line. This, of course, of necessity means that a 132 character printer will have to be used if full lines are used. Of course there is no need why 80 column printers should not be used, so long as the lines do not extend beyond this length, or if the user does not require printed output.

As a mail order Company we have little personal contact with our customers in the flesh. We communicate with them on the telephone and in letters, but they seldom come and visit us in the outback of Bexhill. This is sad, but we tend to make up for it by going to exhibitions and you will see elsewhere in this list our intentions in this regard for 1982. Meanwhile, customers often ask us what sort of premises we have, so we got somebody in to photograph us at work. The above is the result. Unfortunately it can only show our general office area and the staff who were around at the time, but at least when you telephone us you will have some idea of to whom and to what you are speaking!

JULY LISTING

CRUSADERS – SARACENS AND CRUSADERS

It is a little difficult to decide whether or not to call this a war game. It is in all respects the type of game that is so normally described. On the other hand, we are not at all sure that it is accurate to call a series of conflicts between the Crusaders and Saracens, a war. Anyway, the scenario is that you are the King of Jerusalem and have to rule your Kingdom from 1169 to 1177. Your ultimate aim is to prevent any incursions by the invading Saracens. You have a total of forty-eight fortresses, all interconnected by caravan routes. The program will pick these off one by one, unless you can defeat the Saracen army in the field, by gathering together an army for yourself from the various garrisons.
Each year consists of six (bi-monthly) moves. At the end of each year (at play rating 6), you will find a new Saracen army moves into the Kingdom from enemy territory. All Saracen armies that stay in the field for a year are reduced by desertions.
The program itself has an artificial intelligence, in as much as the Saracens attempt to seige and take castles and fortresses that they have not previously moved to. In this way a Saracen army that has been seiging for a few years may be reinforced by a new army, which may be sufficient troops to affect the taking of the fortress.
However, your troubles do not stop there! You have to provide food for garrisons and your assembling army. If you find a garrison is under seige, the only way to give them food is to send a caravan, which costs money!

The historical background is:
In 1160 Nur-ad-Din captured Reynald of Antioch and four years later he defeated and captured Bohemond III of Antioch at Artah. This left Jerusalem the supreme Christian Kingdom in Syria.
In 1162, Baldwin III of Jerusalem died and was succeeded by his brother, Amalric. He was defeated at Ashmun by the Syrians in 1167, but in August of the same year, Saladin, commanding the Syrian garrison of Alexandria, surrendered to Amalric and his Egyptian allies.
By 1168 Amalric had camped outside Cairo, but withdrew when the Caliph received forces in response to an appeal to Nur-ad-Din. During Amalric's absence Shirkuh, Nur-ad-Din's lieutenant, seized control of Egypt and became Al-Adid's vizir. On 23rd March 1169, Shirkuh died and was succeeded by his nephew, Saladin.
The program is menu-orientated and a map is supplied for both the Northern area and the Southern. The graphics are good, and both Crusader lines and Saracen lines are also displayed, again with an appropriate map. The caravans, of course, are used to transport food from town to town and when this option in the menu is selected then the 5 available caravans are displayed on the screen. You then have four options, to attach or detach food or horses, and to raise or move caravans.
The program is quite involved as many war games are, and again in a similar manner to such programs, the year is split up into moves, in this case, six. Seiges are rather fun. The beseiged can hold out whilst their defence points exceed the number of beseigers. If the Saracens exceed the defence points, then the defences will be weakened by as much as the difference between the Saracens and the defence points. When and if your defence points drop below zero then the garrison falls to the Saracens. In summary, quite a complex, but rather enjoyable strategy game.

PARAFORM – DISPLAY THOSE PARAMETERS

This is a program for disk owners and is compatible with LDOS, TRSDOS and NEWDOS+. Disk operating systems have evolved over the last two years or so, and the number of parameters used by individual commands has risen almost pro-rata to the complexity of the functions carried out by the commands themselves. It is often difficult, therefore, to remember all of the parameters available with specific commands. This utility is designed to be resident in the system at all times and to display the parameters available for any given command and to provide an easy method of entering command parameters. The program takes about 700 bytes of memory and is loaded of course from DOS. High Memory is adjusted to protect Paraform, and so long as the utility is to be left in memory during the particular power-up, its loading can be Configured in LDOS so that it is installed automatically. It could also be made the subject of an AUTO command in TRSDOS and NEWDOS+ and presumably could be loaded under the little routine in the Hints and Tips this month. Paraform may be removed at any time with a simple command and the memory used by Paraform will then be released, provided that Paraform was the last program loaded into High Memory. This, therefore, presupposes that Paraform will not be loaded from Basic, which in any event would probably be rather poor procedure.
After Paraform has been loaded it is used simply by typing the appropriate command, that is to say, the command about which you wish to know the parameters, followed by a question mark. The parameters available with that command will then be displayed ten at a time on the screen, **together with** the value held by the program as the default entry. The operator may then enter a parameter such as Yes, No, On or Off, and so on. This will then be exchanged for the default values and used by the program.

LED – LDOS GENERAL PURPOSE EDITOR

This is the official LDOS Text Editor designed for writing and maintaining almost any type of text. It will handle both line number and un-numbered text files in a word processor like manner. Indeed, it could be used as a word processor, although perhaps not one with very enhanced features. It is perfect for all types of pure Source files, including Basic. It may also be used on PATCH and JCL files. It is priced low as an add-on feature to LDOS.
It is made particularly versatile because of the number of parameters that may be added when designating the file that you are going to edit. First of all, of course, is the ordinary ASCII file. If the file is of this nature then this is added as a parameter. The second parameter will enable you to save the terminator of whatever file you are loading. A particular application of this parameter is to create a Scripsit compatible ASCII file. The next parameter available is the ability to extend tabs when loading a file with embedded tabs. If the file to be read is a word processor text file ending with a Hex 00 byte which is to be retained, then this must be specified. Finally, a very useful Translate feature is available as a parameter, whereby one byte is translated or changed into another byte as the file is loaded or saved.
It is not really necessary to go through all of the commands of LED. Apart from the above, it is a fairly straightforward screen-orientated text editor. The arrow keys are used for positioning the cursor. KI/DVR, incidentally, must be loaded before LED and, therefore, the facilities of that Driver are available in this program. There are tab controls and one is able to get to the beginning and end of line positions with single keystrokes; the same remark applies to the top or bottom of text. One rather nice convenience feature is that the Menu is available at all times in a bottom "window" of the screen. The editing features include insertion and deletion. Blocks may be marked for deletion and there is a Search command and a Change command connected with it. Rather unusual for a text editor is the feature which allows characters to be entered in Hexadecimal form. Scrolling both upwards and downwards on the screen is by page and an ALL command is available for use with the Find, Change and Tab commands to select global operations. After you have operated on the file, it may be Saved under a different name, thus it will not overwrite the original unless required. LED is compatible with smal-LDOS.

SEA WOLF – FOR UNDERWATER ARCADES!

It is a fair comment on the market today to say that one can be getting a little tired of space arcade games. We stock quite a few and there must be at least a hundred or so on the market. It is, therefore, with some relief that one turns to an arcade type game which takes place underwater, and it should be made clear from the start that it suffers nothing from that. It is in fact a very addictable piece of software. The idea is that you are in control of a submarine which can be moved in any direction, including diagonally with the arrow keys. Whilst you are happily proceeding upon your, no doubt, legal duties you meet ships, unfortunately enemy ones. They depth charge you, and you have to dodge the depth charges. There are two other main hazards to contend with. First of all there is always a liberal sprinkling of mines around to be avoided, and also of some importance is the bottom of the sea itself. This is very mountainous and continually changing. Contact with it will be catastrophic. It is a funny thing with arcade games. Everbody likes their own and in describing them it is very difficult to get across the "thrill level". Some of us in the office prefer this game to any of the space ones. Others remain loyal to Invaders and Asteroids. Whatever your taste, Sea Wolf is a very enjoyable arcade game. Scores are kept, of course, and there are five skill levels. For a change these are quite realistic. Sometimes one will get games where the highest level of skill is such that it is pretty well impossible to play and the least skillful is so slow that one goes to sleep. This is not so with Sea Wolf. The levels truly reflect the amount of skill which you have or have not gained from experience of the game. They affect the speed of the submarine and also the number of depth charges dropped by the search vessels. Furthermore, with each 10,000 points a bonus submarine is given, but on the other side of the coin, the level automatically goes one more difficult. If you get to 40,000 points then the number of mines automatically increases. Sound, of course, is included, but it would be fair to say that this is not a prime feature of the game. The controls are with the arrow keys. Sea Wolf is not simply a dodging game. The submarine itself has armament in the form of torpedoes which fire laterally and missiles which fire vertically. A nice touch is that the former are fired by pressing the left and right arrows at the same time, and the latter by pressing the up and down arrows simultaneously. As we have explained, the direction of the submarine is controlled with these same four arrows and so it means that one never has to take one's fingers off this set of keys. In the disk version the current best score is saved to disk so that it is available after a power-down.

GRAPHIT – GRAPHS AND VISICALC COMPATIBILITY

There are a number of programs which will portray graphs on a microcomputer. Indeed, we stock two of them already, namely Graph Plotter and Plotter. Both of these have additional facilities however, and it is fair to say that they are both fairly complex to use. Graphit, therefore, has been written with three prime requirements in mind. First of all, that it should not only be extremely easy to use, but also that there should be a Help command available at all times so that the user can immediately ascertain any commands that he has forgotten. The second requirement was that the files which are created should be compatible with Visicalc and vice-versa. Finally, the author was asked to provide a program in which the user can manipulate the graph in almost any way he can think of. In particular, we had in mind that the scale of the graph, in other words, its magnification or enlargement, should be almost infinite. We are happy to say that all of these requirements have been met. You can do with Graphit pretty well anything you could want to do with a graph. Two types of graphing, incidentally, are available – either zig-zag or step. This has been included because some data is far more easily displayed in one or other of these two methods.

To explain the Visicalc compatibility first. In Visicalc one can elect to store data in a number of different ways, one of which is a DIF (Data Interchange Form) file. Such files (containing data which is capable of being graphed) can be loaded into Graphit and a graph drawn. In the same way, if one elects to enter the data direct into Graphit, any file which Graphit makes can be loaded into Visicalc and the data manipulated in any way available in that program. There is, therefore, as you will see, complete interchange with the popular Visicalc program, which is manufactured by Visi Corp.

As we have said, Graphit is extremely versatile, particularly in its methods of display. Pages may be moved from left to right and up and down, either a page at a time or a column at a time. If one elects to enter data direct into Graphit then the user has editing facilities for deleting items and adding them. They may, of course, also be modified in any other way. In other words, one effectively has a screen editor available when in the data entry mode. The program is only disk compatible. It has no compatibility with tape, so the data files which are produced are saved to disk. The user has the facility for entering a title to the graph. Alternatively, Graphit itself will give it one, "Graphit Data". A hardcopy of the graph may be obtained. In other words, there is a command for sending the data to the line printer. Alternatively a screen printer, which is supplied in most DOS's nowadays, may be used. Also, of course, the data in tabular form may be sent out to a line printer. A particularly nice feature is the ability of Graphit to swap sides when it is displaying a graph. Let us, before we describe this, take an example. Assume that we have data made up of twelve calendar months and a figure against each. One can instruct Graphit to display the months either at the side or at the bottom of the graph. If, for instance, the calendar months are displayed along the bottom, then with one keystroke Graphit will change the axis so that the labels go up the side and the figures along the bottom. This can be quite an enlightening process, as a matter of fact. Also, whilst the display is being shown, the user can elect to change from zig-zag to flat or vice-versa. Flat, incidentally, is similar to a bar graph, but the lines at each graph point do not extend to the base line. In other words, a linear graph going up in, say, decades of 10 in flat display will look like a flight of steps. This method of display is usually preferred for the type of data of which we are speaking, namely month by month sales results. Other data, say, for instance, room temperature during a day, is more usually displayed in zig-zag form.

As we have said, probably the most important part of any graphing program is the scales of display available. In the first instance, Graphit will select its own automatically, but this may not be the one which the user wishes to have shown. Let us take another example. Assume that we are plotting sales figures (sorry to keep on using that example but it is an obvious one), over a 3½ year period, say from January 1979 to May 1982. This is 41 items. The maximum, incidentally, is one hundred. Let us assume further that we elect to have the labels, that is the month and year, along the bottom on the display. When the graph is first shown on the screen, the months from January 1979 to June 1979 will be displayed, in other words, six months. This may or may not be meaningful. If one wishes to examine, say, just the next six months, then all one has to do is to press the R key for Right and the months from July to December 1979 will be shown. Supposing that we needed January 1980 then we can press the right hand arrow key and the months from August 1979 to January 1980 will be displayed. Having looked at these months, we now decide that we would like to see a more extensive part of the graph. We have got August 1979 as our starting month, so let's enlarge to over a year. Pressing a key will produce a display from August 1979 to November 1980. Assuming that this is not enough, pressing the same key again will give us from August 1979 to May 1982. If you have followed the foregoing you will have seen that we have been ignoring the first few months of the graph. This, of course, need not be so, for merely pressing the L key will bring up the preceding page and add it to the existing one so that we now have a total graph for the period January 1979 to May 1982. This description has been somewhat long-winded, but we wanted to get across the point that literally any section of the graph can be magnified or made smaller at will. Had we decided, at the start, that we wanted the entire graph we need only have pressed the enlargement key twice and we would have got it.

So far as numerical data is concerned, the range is from minus 100,000 to plus 100,000. This has been selected because it is all that can be reasonably displayed. If higher figures are required, then the user should decide the scale of that himself, and perhaps contain a mention of it in the title, such as "amounts in millions", or whatever.

There is also a command to "correct" the axis by moving the origin to the first label and the value to zero. If, for instance, one has values both positive and negative up the side then if the values are symmetrical the graph will automatically select a scale which will put the zero half way up the screen. Correcting the graph in these circumstances would move the zero down to the left hand corner so that effectively only the positive values are shown. On almost all entries, a default value, which is displayed, has been allowed for. This takes the form of the default letter flashing at the cursor position. For instance, one of the questions you are asked is "Do you want to save the data to a file?" The letter N will be flashing. If you do not wish to save the data then simply hit the Enter key. If you do, you enter Y or YES. There are a number of convenience features like this throughout the program.

smal-LDOS — THE OFFSPRING OF LDOS

LDOS was under development in excess of a year, at a cost of between ¼ and ½ million dollars. It was, and is, an extremely professional disk operating system, providing the Tandy and Genie end user with, in our opinion, the finest DOS available. It was written after many of the other DOS's were either on the market or at least well known in the industry, and benefited therefrom. After we had been selling LDOS for some time we approached Logical Systems, the authors, and asked them if it would be possible to produce a stripped down version of LDOS suitable for the Genie machines, that is to say, the original Video Genie, the Genie I, Genie II and also the Model I and the Model III Tandy machines. Primarily the conception of smal-LDOS, however, was for the Genie machines because they are not provided with any disk operating system, whereas of course the Tandy ones have TRSDOS. We should say that it took a fair amount of persuasion, but eventually Logical agreed. The result, smal-LDOS, is an economically priced miniature of the original. Obviously, long, and I might say, late, hours were spent on making the decisions necessary as to inclusion or exclusion of LDOS features, but the result, we think, is a well-balanced DOS which has many of the features of the original, but in a number of respects excludes some of the complexities of LDOS. It is supplied with a comprehensive manual which not only covers the DOS but also the Disk Basic which also is included. smal-LDOS has obvious application for the Genie but it also has benefits for Tandy owners who have no experience of LDOS. Let us make it quite clear that if you have LDOS there is absolutely no purpose in buying smal-LDOS, but if you do not, then we have arranged the financial side of matters so that it is not prohibitive to buy smal-LDOS and then change to LDOS. In fact, it is true to say that smal-LDOS is the first disk operating system issued for these machines for which it is possible to upgrade to a full scale DOS without any large penalty. The reason for this is that every smal-LDOS comes with a coupon worth £15. This is redeemable at Molimerx against the purchase of LDOS. Hence (at the price as we go to press) if one takes advantage of this coupon, the effective price of smal-LDOS is only £23 + V.A.T. You may agree with us that this is a low price to pay for a disk operating system of the calibre of smal-LDOS.

Elsewhere in this catalogue you will find very full descriptions of the commands in LDOS. we need not, therefore, repeat them again for smal-LDOS. Perhaps, therefore, the reader will be kind enough to refer to pages 63 to 70 and 123 for explanations of the commands. The Library Commands in smal-LDOS are:

APPEND	DIR	MEMORY
ATTRIB	DO	RENAME
AUTO	FILTER	RUN
CLOCK	KILL	SET
COPY	LIB	SYSTEM
DATE	LIST	TIME
DEVICE	LOAD	VERIFY

The Utilities are:

BACKUP	HITAPE	RDUBL
CONV	PDUBL	REPAIR
FORMAT		

In addition to the above, one filter program is supplied, a printer filter, and one Driver, Keyboard Driver. Finally, smal-LDOS contains a full Disk Basic including a high speed sort but excluding two of the features in LDOS, namely cross-reference and re-number.

As we have said, all of the above commands will be explained under LDOS. Some of the commands in smal-LDOS will lack some of the full features of LDOS but in general they carry out the same functions. If any customer is unsure we can supply full leaflets on both, free on request, or we can confirm on the telephone. There is one apparent anomoly that we should mention, and that is the inclusion in smal-LDOS of the DO command without the inclusion of either the JCL compiler or a Build command. The purpose of DO is to carry out what may be an extremely extensive series of commands at power up time without any intervention by the operator. It takes a previously prepared file and executes everything in it as if the keystrokes had come from the keyboard. This file is usually compiled with JCL (Job Control Language). This is not included in smal-LDOS but DO will execute any ASCII file and as smal-LDOS is to some extent device independent like its parent LDOS, it is simple to construct such an ASCII file with the COPY command. In other words, one simply copies from the keyboard into a file, or, put even more simply one merely types from the keyboard into a disk file! One of the many joys of smal-LDOS! One other item of explanation. In the above list of utilities will be seen two utilities entitled PDUBL and RDUBL. The former is the regular LDOS utility to enable double density disks to be used on the Genie machines and the Model I Tandy. As will probably be generally known by the time this list is released, Tandy themselves will be releasing shortly their own doubler board. RDUBL is the driver for that board. smal-LDOS therefore supports double density with either hardware modification.

FASTBACK — MODEL II BACKUP FACILITY

It is a well-known complaint that the Backup facility in the Model II TRSDOS both 1.2 and 2.0 is rather slow. Accordingly, Racet have produced this program, which, unlike the TRSDOS one, copies by tracks and not individual files. It is, therefore, very much faster than normal and Fastback will in fact make an identical copy of a TRSDOS disk in 55 seconds, even if the disk is full. Although it copies by track, each sector is verified individually with full error checking. Disks formatted under either 1.2 or 2.0 (and these of course apply to the ''A'' variations as well), may be copied. The error checking is as extensive as is the checking in TRSDOS and one particular feature of importance is the fact that Fastback will copy a bad disk. One must make some sort of disclaimer on that remark. Obviously, if the Format is bad or some other catastrophic fault exists, even Fastback will not copy. The feature arises because whereas TRSDOS refers to the directory in order to carry out the Backup procedure, Fastback, as mentioned, does it on a track by track basis. Consequently, faults in the directory will not affect the Backup. Needless to say, a bad disk before Backup will also be a bad disk afterwards. One of the problems in carrying out surgery on bad disks is that if a copy cannot be made, one is working on the original. This is not very good for the surgeon's peace of mind. To be able to work on a Backup is a great relief. Fastback does not require a knowledge of the main password of the source disk. This facility is not put in to enable illegal copying but is inherent in the method used. In any event the destination disk will contain the same password and have exactly the same degree of protection.

555 — FOR ELECTRONIC BUFFS ONLY

It is little exaggeration to say that the most well known integrated circuit ever produced is one called 555. It is made by almost all manufacturers and is effectively the industry standard for timer circuits. It has a large multiplicity of uses, particularly in multivibrator circuits. The data sheet which is available from the manufacturers regarding the 555 usually includes a number of graphs for the rough selection of component values. These external components decide the frequency at which the timer, that is to say, the 555 will oscillate. Although in no way impractical, it is a fair comment to say that the results of using these graphs is not always as precise as one would wish. Accordingly, this program has been written to enable an electronics constructor to find the answers to a 555 problem in a quick and accurate manner.

The user must first enter the frequency required for an astable multivibrator together with the pulse width desired. The duty cycle or low pulse width can be entered, depending upon whichever is known. Forty-four preferred values of capacitors are available in the range of .001 to 100 microfarads. The lowest value capacitor that will function in the circuit is shown first, and if any other higher values are suitable they will be displayed as an alternative values function. Two types of astable circuits are used, the conventional one for a duty cycle of approximately 50 to 100% and an extended duty cycle of near 0% to 100%. In addition to finding component values in these two astable circuits, the program may also be used to display the resulting parameters from the use of known component values. In the monostable mode a time period may be entered and component values found. In a similar manner to the description for the astable circuit above known values for a monostable circuit may be entered, to find the component values.

The graphics of the program are good. The circuit is shown nice and neatly and a particularly nice touch is an animated display of the pulse itself which is related to frequency by its speed and to its duty cycle in five, 20% steps. The accuracy of 555 is good, but it should be borne in mind that the chip itself may only be accurate to within 2% in astable. Furthermore, depending on the external components in use they will have a tolerance all of which will instil some error. As users well know, in particular electrolytic capacitors sometimes have a very large tolerance range.

ACCEL 1, 3 AND 4 — BASIC COMPILERS

ACCEL 4 — THE LATEST IN THE ACCEL FAMILY

The ACCEL series of Basic Compilers has by now achieved a certain amount of fame as reasonably priced, yet highly efficient compilers of the Microsoft Basic. They have all been written by Chris Paradine who formed a firm, Southern Software, in order to market ACCEL and his other items of software. In fact ACCEL has now become so popular, both in the United Kingdom and in the United States of America, that future manufacturing and most of the marketing of ACCEL 4 has been turned over to Molimerx Limited, although of course you can still get the product from Southern Software if you wish. The original ACCEL for Level II Basic was first released at the end of 1979. Compared to later versions it was a little slow and was capable of compiling fewer statements than later generations. The next in this evolutionary chain was ACCEL II. For the first time this supported Disk Basic and was much faster than ACCEL. A further improvement was added in February 1981 to ACCEL II, but the major new up-date was in March 1982 with the advent of ACCEL III. This was a complete new release, but still based on the unique principle of merging compiled and interpreted code to give the greatest possible compatibility with Microsoft Basic. Now in September 1982 we have the issue of ACCEL 4. One might call this the third generation because it is the first one which makes use of the DOS overlay principle. This new architectural structure renders a number of important improvements, but the most important and startling one is that, apart from a small control routine of less than 128 bytes, no user memory is sacrificed to the compilation. Essentially, therefore, the entire amount of user memory available may be used for the Object program. Other features of ACCEL 4 are as follows: —

1. Compiled code is more compact,
2. Better ease of use. Runs directly from disk, leaving user memory free,
3. Compiled program can be invoked direct from DOS,
4. Much faster compilation, especially for large programs,
5. SAVE, LOAD, RUN, supported for compiled programs,
6. Unstructured FOR-NEXT supported, e.g. IF A = 1 THEN NEXT,
7. Array references are optimised:
   - Multi-dimension
   - Variable-bound arrays, e.g. INPUT N:DIM
   - A(N)
8. INP and OUT are optimised,
9. Full chaining of compiled and uncompiled programs.

As readers will know one of the processes of a compiler is to make a Basic program run faster. With a small number of programs there will not be any great improvement particularly, for instance, when the program is continuously accessing a peripheral. It is, therefore, impossible to give any hard and fast numbers, as the speed up will vary from something quite spectacular like 20 or 30 times the speed of the original to a speed increase of next to nothing. It should also be understood that a compiled program will normally be larger than an uncompiled one. ACCEL 4 is particularly miserly with space and as mentioned above essentially no user memory is sacrificed to the compilation.

The foremost objective of ACCEL 4 is to achieve compatible execution of Basic programs, no matter what features of the language are used. The compilation process results in a program which is a mixture of Basic statements and directly executing Z80 machine instructions. The run-time routines in ACCEL 4 yield control to the interpreter when an unoptimised statement or expression is encountered, and they also ensure that the variable values accessed by the interpreter and the compiled code are consistent. No matter what options you use on PRINT and INPUT, or GET and PUT, or even if you use the more obscure functions, your program will still run. A special compile-time option enables you deliberately to suppress optimisation, across a section of program. This option is provided to improve the chance that non-Microsoft Basic language extensions will run, but no guarantee is given. The following table summarises those language features that are optimised by ACCEL 4. For an unoptimised statement (like PUT), then all expressions contained in that statement are also unoptimised. For an unoptimised function (like SIN), the contained expression is also unoptimised but the containing expressions can still be optimised. If you are considering the sale of your compiled programs you should allocate some time to the tuning of the program to the capabilities of the compiler, which are of course directly related to the capabilities of the Z80 CPU chip. Because any item not included in the following list (e.g. SIN(X) or LPRINT), will be interpreted, it may slow the program down, but it will not affect correct execution.

Optimised Functions

GOTO,GOSUB,RETURN,RESTORE,IF,THEN,ELSE,CLEAR,ON	Always
LET(assignment),POKE,SET,RESET,POINT,PEEK,VARPTR	All data types
+ − × / AND OR NOT = (and all comparison operators)	All data types
Constants, e.g. 123, 12.3,"ABC"	All data types
FOR,NEXT	All data types (i.e. INTEGER & SINGLE)
PRINT	Partial optimisation
LEN, MID$, LEFT$, RIGHT$, CHR$, ASC, CVI, MKS$, CVD, MKD$	All data types
INP, OUT	All data types
Array references	All data types and bounds

The Basic interpreter finds the locations of each variable by a sequential search through its dictionary at execution time. By contrast the compiler allocates storage for each variable at compile-time, and replaces each reference to that variable (in an optimised statement) by a direct machine address. Similarly, each line reference in GOTO or GOSUB is translated to a branch address, whereas the Basic interpreter searches sequentially through the program to resolve each target line at run-time. Generally speaking, the longer the program and the more variables it contains, then the greater the performance improvements that result from compilation.

ACCEL 4 is compatible with Tandy's TRSDOS and Logical Systems Inc.'s LDOS and smal-LDOS. TRSDOS is, of course, the standard of the "normal" disk operating systems and it is felt that LDOS is the standard of the sophisticated DOS's. Hence no attempt will be made by the author to extend the compatibility of ACCEL 4. The software market at the moment is such that the program content and quality is beginning to suffer because authors try to be "all things to all men". The advanced features of ACCEL 4 have come about in part because Chris Paradine knew which systems he was writing for. ACCEL 4 is compatible with the Tandy Model I and Model III machines, together with the original Video Genie and the Genie I and Genie II. There may well later be a version for the Genie Model III, but no plans have been made in respect of the Tandy Model II.

There are four restrictions as follows:

1. No redefinition of meaning of names. e.g. DEFSNG 1:1 = 1:DEFINT 1:1 = 1 is disallowed
2. Behaviour of error conditions is not necessarily compatible. Data-dependent errors, such as OVERFLOW, or a function argument out of range, are not necessarily diagnosed. The current line number (used in diagnosis, error handling and in trace) is not accurately maintained. Programs containing "ON ERROR" traps may not work as intended (but I/O errors are correctly trapped).
3. Editing is not possible on the compiled program. The commands AUTO, DELETE, EDIT, NAME, CSAVE, CLOAD and MERGE, cannot be used. NEW, CLOAD OR LOAD must be used to reset the machine to its normal state.

As we have said, ACCEL 4 is compatible with the Microsoft Basic used in the machines mentioned above. Because of this the user gets the advantage of both interpretation and compilation. He already has the interpreter in his machine and ACCEL 4 provides the compilation, hence programs are able to be modified and debugged in the normal way using the resident interpreter. When the user is satisfied with the program, it is compiled. Calling the compiler is extremely easy. It is only necessary from Disk Basic to type CMD "I" "ACCEL". ACCEL 4 supports the commands SAVE, LOAD and RUN in the compiled program, but not CSAVE or CLOAD. A compiled program can be sent to tape but a separate utility such as TSAVE would have to be used.

ACCEL 1

ACCEL 1 is available only on tape and was the first fairly rudimentary compiler in the range. There are several basic statements and functions which it does not compile or optimise and, generally speaking, it is considerably slower than its older brothers. Nonetheless, it does give a very considerable increase in speed over the Basic interpreter, and thus, where a customer is only interested in tape and the product has to made to fit within a budget, then ACCEL 1 is still a viable choice.

ACCEL 3

ACCEL 3 is available on tape and disk and is probably the best choice for all-round performance. It does require around 1½ K run time over-head, which, of course, ACCEL 4 does not. On the other hand, ACCEL 4 is not available for tape. ACCEL 3 optimises far more statements than does ACCEL 1. You will note in the description for ACCEL 4 above, the sub-heading "Optimised Functions". A few paragraphs above that you will see a list of the features of ACCEL 4. In so far as the latter refers to optimised functions, if they are "deducted" from the optimised functions, then one would get a list of the functions for ACCEL 3.
We would recommend ACCEL 3 for:

a) Tape users.
b) Where run-time is not important.
c) Where the extra features of ACCEL 4 are not important.

JUMBO – A TRUE FLYING SIMULATION

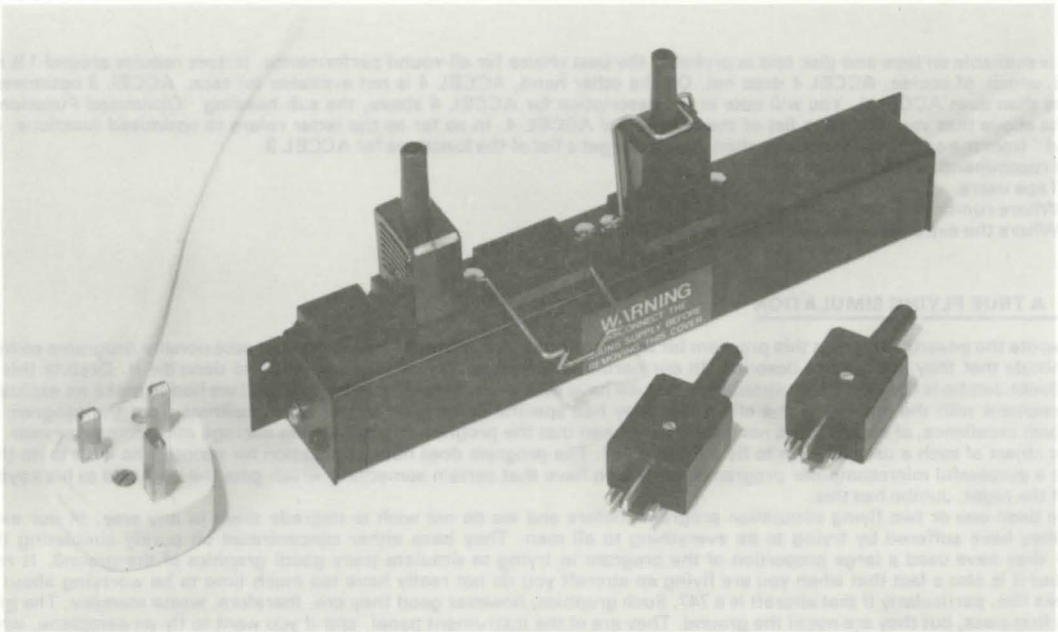
When we wrote the advertisement on this program for the magazines, we started it by saying that occasionally programs come along of such magnitude that they are hard to describe. In our normal ambiguous way, we then went on to describe it. Despite this paradox, without a doubt Jumbo is the best flying simulation that we have ever seen. Indeed, it is so good that we had to make an exclusion in our royalty agreement with the authors to the effect that they had specific permission to use the algorithms from the program for flight training. Such excellence, of course, does not necessarily mean that the program is good for the average microcomputer user. After all, it is not the object of such a user to learn to fly a Boeing 747. The program does have application for people who wish to do this, but in order to be a successful microcomputer program it must also have that certain something which gets the user tied to his keyboard into all hours of the night. Jumbo has this.
There have been one or two flying simulation programs before and we do not wish to degrade them in any way. In our experience, however, they have suffered by trying to be everything to all men. They have either concentrated on purely simulating the use of controls or they have used a large proportion of the program in trying to simulate (very good) graphics of the ground. It may be an anomaly, but it is also a fact that when you are flying an aircraft you do not really have too much time to be worrying about what the ground looks like, particularly if that aircraft is a 747. Such graphics, however good they are, therefore, waste memory. The graphics in Jumbo are first class, but they are not of the ground. They are of the instrument panel, and if you want to fly an aeroplane, whether big or small, it is the instrument panel that you had better concentrate on.
The program has been written by two gentlemen, one is a professional pilot and one is a very good programmer. The former has instilled into the program so much fantastically accurate simulation and "feel" of flying a large aircraft that it is almost uncanny. The latter has used a large number of programming techniques so that literally every last byte of the available memory is used. When you start Jumbo you are in the cockpit. From that moment on, you go through the entire spectrum of a trip. You have to start the engines, choose your route and course, take off, climb to altitude, cruise, start to let down, find the airport and eventually, hopefully, land. In other words, you get the whole flying experience. What is more, you can carry out your flight anywhere you want. Eight airports are available to you: London, Birmingham, Manchester, Prestwick, Edinburgh, Belfast, Shannon, and New York. We have already emphasised the authenticity of this software, and of course it takes some 7 or 8 hours to fly to or from New York. Accordingly, the author has allowed for a time abbreviation, or time out, feature. This permits one to go forward in minutes or hours, in seconds. During this time, an automatic pilot is assumed to be on and the distance to go, fuel consumption and time are continually updated as they would be in real life.
If you are beginning to feel that this is all a bit beyond you, take heart. We have prepared one of the most extensive manuals for this program that we have had available for any piece of software of even a slightly similar nature. In particular it occurred to us that not everybody knows how to fly a 747. Indeed, many do not know how to fly at all. In order to get true value from this program, it is necessary to know at least the rudimentary facts of flying. Accordingly, the documentation supplied has been split into two manuals. The first is a treatise on the theory of flight and how to control an aircraft. In order to maintain contact with customers who are not familiar with any sort of flying, this has been written by a private pilot and although it obviously refers to flying a 747 occasionally it principally uses as its guide the flying of a light aircraft. The second part of the manual, which contains instructions on running the program and flying a 747, has been written by the author of the program, that is, a professional 747 pilot. Accordingly, the documentation on its own is of considerable value, if you are in any way interested in flying. In addition to the foregoing, a chart is supplied, containing various items of data which you will need when flying Jumbo. It mainly consists of various parameters such as the take-off speeds for various weights of the aircraft, the flap retraction rates, climb and cruise speeds, and descent distances.
Whilst all of the foregoing is of course of the greatest importance, what really is impressive about the program is that it feels right. For even a private pilot with obviously limited experience or perhaps nil experience of flying large aircraft, a feel of flying is obviously apparent, even sitting behind the controls of a TRS-80 or a Genie! The controls are pretty well complete, even to dive and wheel brakes.
The instruments supplied are as follows:

Artificial horizon	Attitude	Fuel
Aileron indicators	Compass	Elapsed time
Indicated airspeed	Turn indicator	Distance to landing
Power setting	Flap indicator	Rate of climb
Elevators		

In addition to all of the above, the programming half of the authorship consortium has somehow managed to squeeze into 16K very impressive maps of Scotland, Northern England, Southern England, Ireland, Eastern U.S.A. and the whole of the United Kingdom. As one progresses on a flight, so one's existing position is shown on the appropriate map. In addition, route information and in particular the bearing of the destination airport is shown. In other words, at all times one knows the compass direction to fly to arrive at the town chosen. To say the least, this makes life a bit easier. When one gets to the chosen airport an instrument landing system is provided. This, as pilots well know, is a radio beam transmitted along the runway at a specific angle so that if, when it is picked up say 10 or more miles out, the aircraft flies the beam exactly, he will finish up at the runway.
We keep on mentioning the realism of this program but it really is quite outstanding. For instance the flying simulation programs that we have previously seen all assume a specific stalling speed for the aircraft concerned. Although a given wing will stall at a given angle, the stalling speed of the aircraft is dependent on a large number of factors. These factors are re-enacted in Jumbo completely and in fact the present stalling speed is shown on the instrument panel at all times. Even a small thing like this has been polished up. As one approaches the stalling speed, this figure starts to flash to draw attention to it. When one gets to the actual stall, which one hopes one does not, then a very large indication comes up on the screen. This is not, of course, a crash. The Jumbo will stall, and one can recover from it, even though it is a highly undesirable manoeuvre to attempt.
There is a lot more that could be said about Jumbo, but perhaps the most important is that whether you have ever flown before or not, that is to say, flown in the pilot's seat before or not, you will enjoy Jumbo.

Suppressor, dist. unit

INTERFERENCE SUPPRESSED DISTRIBUTION UNIT



A NEW IDEA IN INTERFERENCE SUPPRESSION

A Mains Suppressor with the added bonus of a neat, tidy and safe way of connecting your microcomputer and its peripherals to the mains line!

The QED. computer distribution unit provides four miniature mains socket outlets set in an in-line format, for the most efficient use of space. Inside the strip outlet is contained a Mains Suppressor for comprehensive protection against both Continuous and Discontinuous mains borne interference.

The interference suppressed distribution unit contains a full specification interference filter with a frequency range of 150KHz to 100MHz and a discharge time of less than one second.

Although mains interference is an abstract phenomena and therefore difficult to test, we fitted it to a Tandy TRS-80 set up consisting of three drives, a Tandy VI printer, V.D.U., Expansion Interface and Keyboard. This equipment is located in an area in which interference is widespread. Frequent re-bootings were experienced, particularly associated with the switching on or off of domestic appliances and mains surges. After the suppressor was fitted, the re-boots disappeared.

The unit complies with BS613 for mains suppression. It is supplied with a two metre lead fitted with a 13 amp plug. Four miniature plugs are also supplied and as you will see from the photograph, two of the sockets are fitted with retaining clips.

SPECIFICATION

Size:	10" × 1 3/8" × 1 3/8" (255 × 35 × 35mm)	Frequency Range:	150KHz to 100MHz
Length of Cable:	Two metres fitted with 13 amp plug	Discharge Time:	Less than one second
Max. Power:	1500 watts	Fusing:	5 amps
Max. Current:	6 amps	Mains Socket:	A total of four miniature sockets with two sockets fitted with plug retainers for computer and floppy disk
Max. Voltage:	250v AC		
Insertion Loss:	To BS613		

SEPTEMBER LISTING

PENETRATOR — NEW FROM MELBOURNE HOUSE

The games publishers Melbourne House, who sell Penetrator and Strike Force in Australia and the United States, and Molimerx, have been able to come to an agreement, whereby we will be representing Melbourne House in the United Kingdom exclusively.
Penetrator has already gained considerable fame in the United States as a first class arcade game. The scenario is that you take the part of the sole survivor of a fighter squadron whose mission is to invade enemy defence forces and destroy their illegal neutron bomb cache. The mission is highly dangerous and the enemy have installed extremely efficient defences around their neutron bomb stores. The defences are made up of four enemy defence rings, each with its own special dangers. You must penetrate each of these rings to get to the illegal neutron bomb store. Thereafter you must return out through the rings. Scoring is 10 points for ground missiles, 100 for radar bases, 200 for defending paratroopers and 1000 for the first neutron bomb store. The neutron bomb score points are doubled for each store knocked out. The game supports two players if required. Your fighter ship is controlled with the four arrow keys in the normal way. It is possible to brake the ship, but only for a short period. You have a forward missile launcher which is activated by repeatedly pressing the right arrow key. You may also drop bombs on the enemy landscape, hopefully hitting missiles or radar bases. If you are not careful you will encounter the Red Alert. When and if this is achieved you must assume that the enemy has tracked your flight and evasion will now be very difficult. As we have said, there are four stages of defence; the first is the ruggedness of the mountain-side. Obviously if you collide with this you will fail. The second stage is underground, in caverns so that your fighter plane does have room to get down them. There are no new dangers; missile bases and radar stations are still with you, but your moveability is cut down very considerably. The other stage is said to be the most difficult and is a concrete underground area with missiles strategically placed in concrete silos. Stage four is a bit of a mystery because very few fighters have survived it!
One of the big points of Penetrator is that the game can be customised, in other words you are able to change the shape of the landscape and number and positions of the missiles and radar bases. This means that you can produce a new game whenever you wish. Penetrator is a good arcade game. We only have two criticisms of it; one very slight, namely that whenever a game is over one goes through the initialisation period again for the new game. This takes the form of drawing the name of Penetrator out on the screen. This is very nicely done, but does take 30 seconds or so. As we have said, a very small point. The other criticism is also a slight one. The program is very busy most of the time coping with the extremely good graphics. Play is, therefore, very slightly slow. Both of these criticisms are more than made up for by the many good points about the game, in particular the customisation and the ability of two players to take part.

STRIKE FORCE — SECOND PROGRAM FROM MELBOURNE HOUSE

Penetrator, described above, has received a great deal of publicity from Melbourne House in the United States. We assume that Strike Force will receive the same treatment because it is a first class arcade game. We would guess that Strike Force post-dates Penetrator because it contains a large number of the programming techniques with which we are all now getting so familiar. Melbourne House, on the packaging, say that Strike Force is the ultimate challenge in arcade games and this may well be so. Indeed, perhaps we could do little better than to re-print their sales comments as follows:

> ''Strike Force is the ultimate challenge in arcade action — bent on destroying your concepts about game software!
> You'll need iron resolve and nerves of steel to go forth and defend a world of vulnerable cities under relentless alien attack. You are the mighty warrior — saviour of these cities! Armed with rapid-fire missiles, long range radar and incendiary star-shells, you'll need breathless speed to combat all the bombers, escorts, fighters and missiles. Your force field may give you temporary relief, but watch out!
> Skill, cunning, lightning fast response and a keen sense of strategy are not just important — they're imperative to your life and the lives of millions of City dwellers! Strike Force, stretching your skills and imagination beyond this planet, is undoubtedly the fastest and most complex game you will ever see!''

The quality of Strike Force starts right from the beginning. It is hard to describe the graphics, but the words 'Strike Force' appear on the screen as a sort of explosion, which is very effective. The four arrow keys are used in the normal way to control the ship. A very nice feature is that when you reverse direction the ship itself turns and the landscape, of course, starts going back the other way. This gives a very realistic effect and when combined with the fast speed of the game and excellent graphics one can see that the author's claims are not at all preposterous. Like our game 'Defend', one has a ''preview'' of what is coming up and hence can make some sort of plans to avoid the various problems with which you will be faced. You have the use of a force field for protection and you can set this to an energy level of 1-7. Like Defend, the game may be played by two players. Forward firing is supported by way of the space bar. Like Penetrator, the ultimate aim is to get to a neutron bomb, but along the way you will have to get yourself some incendiary star-shells. These can be collected either by landing on them and picking them up or by flying through them. Whichever way, you are going to need one when you get to the neutron bomb.
Penetrator and Strike Force are to some extent similar. They both, incidentally, have sound. As we have occasionally mentioned, quite frequently the likes and dislikes of arcade games are very much subjective, a matter of taste. We feel that Strike Force has a slight edge on Penetrator, but we could quite well be wrong. Disk versions are available for both games.

COLORZAP — FOR THE TANDY COLOUR COMPUTER

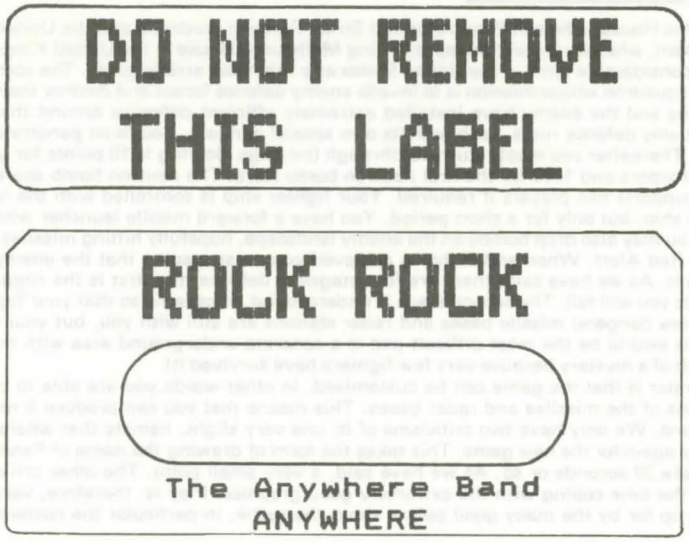
This is a new utility for the Tandy Colour Computer and, as its name implies, it is a program with which to zap disks. As such, incidentally, we are inclined to think that it is unique. There are seven main commands as follows:

DISPLAY DISK SECTORS
VERIFY DISK SECTORS
COPY DISK SECTORS
OBTAIN DIRECTORY
DISPLAY BY FILE SPECIFICATION
ZERO DISK SECTORS
CONVERT GRANULE NUMBERS

We will briefly go through these commands. The Display Disk Sectors does just that. The display is a type of horizontally split screen. The actual data is shown in the bottom half, whereas the top contains the sector identity and byte numbers. You can, of course, move to any character in the sector in order to modify it and scan back and forward through the sectors. The Display by File Specification is similar to the foregoing and the same commands are available. Verification, Zeroing and Copying are all self-explanatory. The Convert Granule Number command requires some explanation. The directory of the colour computer's disk indicates the location of files by their starting granule. If you are attempting to examine a file, however, you need to know the track and sector numbers of the start of the file. To do this you must Convert the granule number into track and sector numbers. This command performs the arithmetic for you. The final option is to View the Directory, and this is straight forward.
A number of commands are provided whilst in the display modes. All of them are quite normal and enable the user to manipulate the display and the contents of the disk in one way or another.
The manual is quite short, only 24 pages. It does contain a great deal of very useful information, particularly on the disk format of the colour computer and there is included a chapter on how to recover killed or clobbered files. All in all, this is an indispensable utility for the colour computer owner with disk drives. We have not described it as fully as we could have done because there are many zapping programs available for the Model I and Model III — see for instance Prozap. Essentially Colorzap is a Zap and reference can be made to descriptions of other Zaps for details. The importance of Colorzap is that it is for the Colour Computer.

LABELMAKER – CASSETTE LABELS AS WELL

This is a purely utilitarian program for use with Epson MX80 printers with or without the Graftrax + modification. It enables the design and manufacture of labels for any application from jam jars to cassette tapes. Two standard label sizes are supported, 3½" × 15/16" and the normal cassette. The following are a couple of examples:



It is not really until one gets this program that one realises how useful labels are. There are literally thousands of applications, many of them far removed from the computer industry. In the manual that comes with the program are some Labelmaker user applications. One of them we particularly like is for home-made wine!

As we have said, Labelmaker enables one to design any label. There are 16 label formats provided for the standard 3½" label. Each of these formats may be modified into many different configurations. There are four print types used and thus the permutations of contents and type is almost infinite. The most distinctive type style is the jumbo, which is almost 3/8" high. The program is supplied on disk and is written in Basic so it should be compatible with any DOS. It certainly is with TRSDOS, NEWDOS + and LDOS. The label format which you design may be stored on disk so that you can come back to them again in the future, and an index is maintained of them. The program is Menu orientated. The Menu provides for accessing the Label file, accessing the Label file index, calling up the print routines and, finally, adding a new label. The latter, of course, is the most important. Constructing a label is extremely easy. First of all one chooses which of the 16 formats is required and then you simply type in the copy that you want to appear on the label. As you do it a facsimile of the label is shown on the screen, so it really could not be easier. Anything you do not like you change and thus print out a sample label. If all is well you then print out as many as you want. A very easy to use program with a simple end product, but as we said earlier it is not until one has the ability to make labels that one understands how useful they can be. Lower case, incidentally, is not mandatory, but it certainly improves the look of the label. We are supplying the program with a quantity of ordinary and cassette labels, but we will not be selling labels on their own. We have arranged with the Paper Shack, 8 Tate Road, Sutton, Surrey, to maintain a stock of labels used with this program and they will be happy to serve your needs.

A l'attention de notre clientèle Française

Nous désirons, Messieurs, attirer votre attention au règlement suivant: une carte de crédit French Visa n'est pas valable à l'étranger si on s'en sert pour une commande par correspondance.

La France et le Sud Afrique sont les seuls pays qui exigent cette restriction at nous devons néanmoins observer ce règlement.

Prière à ceux en possession d'une carte de crédit Visa de notre que nous regrettons ne pouvoir accepter cette modalité de paiement.

A notre avis, aucune autre carte de crédit n'est soumis à cette restriction et nous serons très heureux d'accepter les cartes de crèdit Master Charge ou American Express comme paiement.

FROG II – NOT TO BE CONFUSED WITH FROG I !

The somewhat facetious title must be explained. We already stock a program called Frog described on page 52 of the catalogue. This is an entirely different game and, therefore, has had to be differentiated as shown because we cannot think of another name for it. Frog II is an arcade type game whereby the user, as a frog, endeavours to cross a street, then a river and finally the frog has to find its way into its own hole. It is all very good fun. As always with arcade games, many things are put in the frog's way. As it crosses the street there are cars going in all directions in three lanes. Funnily enough this is not the greatest obstruction. It is when the frog comes to the river that the problems really start, for he must find transportation across. This can take one of three forms, namely a log, the back of a crocodile or the back of a turtle! Too much description herein would defeat the fun of the game. Take it from us that it is not easy and, indeed, gets progressively harder as one goes on. This seems to be a good month for arcade games because like Frenzy mentioned elsewhere, Frog II is very good fun to play. The scoring of the game is, of course, explained in the package, but a rather interesting feature is that levels as such are not used. As we mentioned above the skill level gets progressively harder as one goes on. It is, therefore, truly a game of skill. As an arcade type game there is, of course, sound.

ROULETTE – TO FRENCH RULES

Everybody knows what roulette is, almost everybody knows how to play it, almost nobody ever wins any money at it. There are not many simulations of the game available for microcomputers, at least that we know of, and it is really a natural for the machine. The appeal of this version is the strictness with which it complies to the actual game. The one or two microcomputer versions of roulette that we have seen have not, for instance, had the ability to cope with multiple bets. The odds paid on one number coming up are 35-1. In fact as there

are 37 numbers (0-36) the odds against you winning are 36-1. It is, therefore, an audacious gambler who puts his money on a single number. This is where multiple bets come in. At an actual table one places one's chips on the intersection of the lines if for instance one is covering two numbers. There are a great number of variations of betting on a selection of numbers that one can use and this simulation covers ten of them. We are not quite sure whether this is all that is available in actual life or not. Anyway the point is that multiple betting is supported. The graphics are fair. As we all know it is extremely difficult to display anything approaching a circle on the Tandy or Genie machines. Each player is given 500 chips to begin with. You may define these as your imagination wills. When all bets have been placed (up to 4 players may take part) the wheel will spin and after the usual deathly hush a number will be displayed. The players' kitties will be adjusted and so one proceeds to another turn of the wheel. Needless to say as in everyday roulette, the numbers have colours and again, as in real life, one can bet on the colours. This is always said to be the sucker bet because one only gets even odds. We have always felt that it is one of the best bets but that is probably why we have lost money at roulette. You, however will not, if you play this computer simulation.

ENGINE DRIVER – MORE FUN THAN WITH BR

Some programs are easy to describe and some are hard. This one is hard. A simple description does not really give credit to the software for it is a fun game. On the other hand it is very difficult to bring it to a successful conclusion. If a game is too difficult, then it loses its appeal too easy and it is boring. The game is played on the screen on which is displayed various railway tracks and four stations. Going round the tracks are five trains. Various tracks may be connected to others by way of about 10 sets of points. The speed of the trains may be altered and the points, of course, may be controlled, thus the direction of the trains is under your command and the purpose is to get four of the trains into stations. We say four because the fifth is a "rogue" train – a runaway train – and you have to get all of your other trains out of the way. You cannot control it. As we have said our difficulty in describing the game really arises because, although it is a simple game in conception, it is a difficult one for playing. The graphics are excellent, the title ones particularly so. Your skill is judged by time. Assuming that you do not have a crash then a player who can park all of his trains in the station in a lesser time than another obviously is a winner. As with all of our programs this one has been test played by a number of people and it is sometime since we have received such a difference of opinion on what is essentially a relatively simple game. Perhaps this is the measure of its quality. Engine Driver comes with sound.

LDOS

There is a saying that if you do not blow your own trumpet nobody else will. Hence we are somewhat pleased to be able to announce that Tandy in the United States are recommending and selling LDOS as an alternative disk operating system to TRSDOS. As far as we know this is the first time they have ever done such a thing.

As readers will know we have been sole distributors for LDOS outside the U.S. for over a year now. We were always firmly convinced that it was and is the best disk operating system for the Tandy and Genie machines and it is rather nice to have Tandy eventually in agreement!

It is so nice to be proved right occasionally!!

HELP – LDOS ASSISTANCE

This program is for LDOS owners only. It is made up of two components; the first is, of course, a disk with the software on it; the other is a quick reference card. To deal with the latter first. We find it of rather poorer quality than one normally associates with LDOS material. Unfortunately it is printed with blue ink on blue stock, so the print does not show up as well as one would like. On the other hand it was composed by Roy Soltoff, the prime author of LDOS, so it does have considerable authority behind it. Most LBasic statements, incidentally, are also listed. Whatever the quality of the card, there is no doubt it does what it sets out to do. The disk contains a series of Utility programs which explain LDOS system commands and syntax to an LDOS user. Eight files are contained on the disk, the first five entitled HELPA, HELPB, HELPX, HELPLB, HELPP, explain, respectively, the Library A functions, the Library B functions, Utility/Driver/Filter functions, LBasic functions and the Partitioned Data Set functions. The other three files are SYNL, SYNX and SYNB. These explain the syntax respectively for the Library, Utility/Driver/Filter and LBasic packages. All of these files are called with a command which indicates the file program about which a query is being made. Thus, for instance, the command from DOS, HELPA (SPOOL), will display on the screen a description of the Spool function of LDOS. The command SYNL(SPOOL) would display on the screen the syntax of the SPOOL command. Abbreviations may be used for the parameter, thus SPOOL may be reduced to SP. It is possible to build one's own HELP type files, but this does require the user to own the Partitioned Data Set program described elsewhere in the catalogue. Whether or not one uses HELP is, we imagine, mainly a matter of taste. Frankly to us it seems a little extraneous. One of the beauties of LDOS is its manual and this program does not really provide anything more. It is useful if the manual is not around or if, due to its bulk, the owner would prefer to use this Utility.

DATA-WRITER – A NEW CONCEPT IN DATA MANAGEMENT

We use above the word "new". We should not, because the method of database management used by Data-Writer has been used on Main Frame computers for a long time. Actually, a Main Frame database management program does not construct a database as such; it assumes that a database exists. Most microcomputer database management programs have the writing, construction and management of the base all in one program. The very description "database management" means just that – management. If you have a company that is concerned in the business of office management, then it does not build the office, but manages it after it is built. Offices are best built by expert builders. Databases are best built by word processors. In other words, a true Data Management program will devote its space to managing the database and doing a lot of other manipulations on it without concerning itself with actually constructing it. In this way, different sections of the base can be operated on and a large quantity of weird and wonderful things can be done with it.

Having gone through all this preamble, we should hasten to say that, although Data-Writer does use the concept of managing a database, it also has an ancillary file by which the database itself can be constructed. Making your database with the Entry program is perfectly viable, but it does have at least one restriction, namely that the field length using Entry is restricted to 35 characters. With a word processor you can include up to 240 characters per field. Furthermore, with a word processor variable length fields will be recognised whereas with the Entry program of Data-Writer one must stipulate the length of the field. In other words, only fixed length fields are supported. In addition there is no doubt that entering data into a computer per se is easier with a word processor than with any other sort of program. One has complete control of the file and, as everybody knows, one can alter, move around and enjoy complete freedom within the database until such time as one is satisfied with it, whereupon it can be filed away. The Entry section of Data-Writer is quite full, as we shall find out in a minute, and certainly does not cause any great problems to the user, so the point of using a word processor is that one does get, firstly, variable field length and secondly, a slight increase in ease of usage.

This, therefore, is the first major point to be made with regard to Data-Writer. Although it is self-contained and is perfectly viable in that context, it does support the use of an external word processor. The latter, incidentally, may be any word processor that produces a pure ASCII file. AJEDIT, for instance, is quite compatible, so is SCRIPSIT so long as the ASCII saving option is used with the latter. Many other word processors, indeed, by far the great majority, output their files in pure ASCII. The odds are that if your word processor runs on a Tandy or Genie, its files will be compatible with Data-Writer.

There are very few restrictions with Data-Writer, but perhaps we should get the statistics out of the way first. Throughout this description we will be using the normal terminology for databases, that is to say, a file is made up of a collection of records. A record is made up of a collection of fields and a field is one data entry. Taking the rather hackneyed example of a mailing list, the complete list is a file, each collection of a name, address and so on is a Record and the name is a Field, as is the town, as is the street address and so on. So, working up from the bottom, we go Fields, Records and File. The maximum number of fields permitted in a record is 20. The maximum field length using Entry is 35 and using a word processor is 240. Each field, of course, has a label such as ''Address'' or ''Name''. The maximum number of characters per field label is 20. Shortly, we will be describing the individual sections of Data-Writer when these following statistics will make more sense. But to get them out of the way now; the Maths section will allow up to 20 equations per run and each equation can contain up to 255 characters. The Maths sub-program maintains 10 scratch pad memories, carries out its functions in double precision and, therefore, is accurate to 16 decimal places. A strong feature of Data-Writer is its ability to Mail Merge. That is to say, construct (with or without a word processor) and handle form letters, into which various personalisation selections or names may be automatically inserted, such as a name to following ''Dear Mr''. Data-Writer supports up to 20 different such insertions per letter and the maximum length of a form letter is 6,000 characters, which we are reliably informed, is about two and a half A4 sheets. The Sort sub-program will handle up to 4,500 records at one time. So far as we can see, the actual size of the databases is unlimited for it may be split up into a number of files which can be resident on different disks. We imagine that the real restriction is the Sort maximum of 4,500. Although one can spilt one's database up into, say, half a dozen sections, each section will have to be 4,500 records or less if a Sort is to be carried out. These, therefore, are the vital statistics of Data-Writer. We will continue to a description of the software itself.

Introduction

It is sometimes difficult when one has spent many days and weeks assessing a piece of software and has had input from a number of different testers, to stand back and try and see the wood rather than the individual trees. Probably the one general thing that is outstanding about Data-Writer flows from the original concept of having a database ''separate'' from the management program and upon which the latter operates. Everything is neat, tidy and easy to use. Like the surgeon, Data-Writer operates on the database with instruments which are easily selected and easily to hand. If you want to sort the base, from DOS you type SORT; if you want to edit it you type EDIT and so on and so forth. It is all neat, tidy and logical. Maxi Manager is the database management program that has been the most popular prior to Data-Writer and there is nothing wrong with that software, but it is a bit complex. It is not really tidy. One is often left saying to oneself ''I wonder if I did that right'' or ''why should that have happened''. With Data-Writer, we were never in any doubt. With many databases the disk drives seem to be continually thrashing around. With Data-Writer you are using one particular instrument (program) at a time. When you finish with it you put it down and perhaps choose another one, but you are not continually trying to juggle a scalpel and a pair of pliers at the same time.

Without a doubt, the best language to write data manipulation programs is in a high level language. On the other hand, as we all know, Assembly code works an awful lot faster. Data-Writer was written in Basic, but it is Compiled. It therefore incorporates the best of both worlds.

The history of documentation for database management programs has not been a happy one. They seem to vary from the incredibly obtuse to the inefficiently basic. We should not really go into documentation in the catalogue because it would seem that there is nothing which raises the hackles of a computer user more than a description of program documentation with which he does not agree. Parenthetically, at great cost and trouble, we had to produce a separate beginners' manual for AJEDIT before the popularity of that word processor could be realised. Now we are getting letters complaining that we are talking down to users! It really is a field in which the software vendor cannot win, so no doubt some of you will disagree, but in our opinion the documentation of Data-Writer is good. It is simple, concise, well printed and well presented. It comes in an A5 binder and approaches 100 pages in length. Each section of the program suite is first of all summarised and then described in more depth. Indeed, we have some evidence that, at long last, we have found documentation that might be to everybody's taste!

Data-Writer is made up of 10 separate sub-programs. Each performs its own function and only interacts with another section by way of the database itself. As we have said, this gives a nice, logical, easy approach. We will try and follow the format of the manual in describing the software, in that we will take each sub-program separately, first of all summarise its function in the context of the whole and then give some details as to its operation.

Before we do so, we should make one point about the usage of a word processor because, of course, that is not included in the package. As we have said, the only requirement of a word processor is that it should be capable of outputting a pure ASCII file. Each database file must have as its first record the field names. Subsequent records contain the actual data. The records are then separated from each other by two full stops. The end of file or end of base terminator is four full stops. Assuming, therefore, the nonsensical database of one record containing two fields it would look something like this:

```
NAME
PHONE
..
J Smith
123-45678
..
....
```

The filed identifiers are NAME and PHONE and in our file we have one record containing Mr. Smith's telephone number. As you will see, it could not be easier to write such data with a word processor and that really is all that has to be done.

Data-Writer, therefore, is a database manager that can be used with your word processor or by itself as a complete stand-alone system, the purpose of which is the management and manipulation of text and numeric data, including support for Mail Merge; labelling; mathematic inter-relationships; reports, such as inventories; accounts; stock, mailing lists and so on ad infinitum. Data-Writer is made up of the following 10 sub-programs which we will call sections:

ENTRY

This section allows the user to enter into his database additional records or to construct a database from scratch. In the preceding descriptions we have rather emphasized the use of a word processor. This may be biased because it is the way in which we work here. Entry, however, provides features of its own which are not available from a word processor. For instance, it can perform several different types of data validity checks. These will reduce input errors to a minimum. The feature becomes of particular importance when considering the operation of Data-Writer by inexperienced operatives. In addition, Entry has features to increase the speed of the data entry process including repeating fields and an abbreviation look-up table. A field may be defined as mandatory. If this is done then the program will not allow the operator to skip over the field when entering data. The validity checks are six in number, although perhaps one should say five because the first one is a ''No check''. These checks include examination of the length of the filed; whether the filed is numeric, alpha, or both; whether the formatting of numeric fields is to two decimal places and so on. The abbreviation look-up table may contain up to 100 abbreviations. This, incidentally, can be a very real advantage. It is quite surprising the number of duplications that appear in the average database. The Entry section also supports an audible signal to indicate an error. Thus, whenever an invalid entry is attempted to a field for which validation has been defined, Data-Writer will generate a tone through the cassette port of your computer. If you attach an amplifier to this, an audible signal will be made whenever an invalid entry is made. Data entry using this section is quite straight forward. The arrow keys are operative for cursor control. The program is normally in what is called the overwrite mode. In other words, if an entry has been made or already exists then typing a letter will overwrite the previous entry. There are Delete and Insert modes whereby existing characters may be deleted and new ones inserted. Entry, therefore, contains a mini text editor which carries out all the necessary functions but does not add the luxuries of a word processor.

EDIT

This section enables you to edit or review your data without using a word processor. You are able to correct errors and also to keep the information in your database current. It can be said that Edit is a mini word processor customised to edit databases rather than to edit text. One particularly useful feature of Edit is that it will permit you to edit a database of any size, limited only by the amount of disk space available. When a database is too large to fit into memory Edit uses an Input and Output file so that you can edit the database in sections. The use of Edit is straight forward and follows what might be described as a typical database editor. The four arrow keys are used to move the cursor and full scrolling is supported. In a similar way to the Entry section, Edit is normally in overwrite mode and thus the replacement or edit of incorrect characters is very simple. The current column number of the cursor is available at all times and perhaps, more importantly, so is the current record number. Edit, of course, supports an Insertion mode, but it also supports a Line Insertion mode. It supports deletion in the normal way and it additionally supports the deletion of all characters from the cursor position to the end of the current field. There is a command available to delete an entire field regardless of the cursor position and to delete an entire record. As we have said, scrolling with the arrow keys is supported, but so also is automatic scrolling. Edit enables you to search for a particular record in your database, which is probably an additional plus for using Edit over a word processor. String search is supported and string replacement. All in all there are some two dozen Control key functions in Edit.

MANAGE

Manage is the section that gives you the capability to restructure your database. Fields may be deleted and created, separate databases or files may be merged and large databases may be divided into two. In other words, Manage enables the user to adjust his database for previously unanticipated changes in format and contents. Manage, therefore, gives the user three choices. The first to manipulate fields, the second to merge databases and finally to split databases. We will deal with these separately:

Field Manipulation

The ability to manipulate fields is one of Data-Writer's most powerful features. It often comes about that the user will need to add new fields or delete old ones. Sometimes two fields will need to be merged into one field to make room for new information. The functions available are:

Insert a new field
Delete a field.
Swap the positions of two fields.
Move a field to a different position.
Append one field to another.
Restore the format of the file.

We will not go into detailed explanations of each of these. They are self-explanatory. We would, however, ask you to bear in mind that, particularly the abilities to swap, move and append fields are very powerful indeed.

Merge Databases

It quite frequently comes about that it is convenient to merge databases but not many Management programs allow this to be done. To give a simple example; one has two files, one of customers that have ordered many items, one of customers who have never ordered. Sometimes you will want to mail out a form letter to one or the other, but sometimes you will want to mail to them all. It is true that most programs will permit you to mail first to one and then to the other, but it is far easier if one also has the ability to merge the two files together on the disk so that, without the necessity of re-entering the data, one can merge the two into one large database.

Split a database

For one reason or another it is often found that a database has grown too large. This sub-section will take care of that problem.
As we think you will see, and as we have already said, this section is very powerful. There are virtually no restrictions on its use except for the obvious one of having the same field structure in different databases.

STATISTICS

The statistics section has a number of different functions. Principally it will check your database, proof-reading each record to check for format errors. Each of the sections of Data-Writer has its own error checking and reporting functions, but the Statistics program does provide a final method of reporting errors prior to the actual printing of letters, reports or labels. In addition to its ability to check for format errors, Statistics also reports vital information that you will need in order to use other sections effectively. Finally Statistics may be used to print or display the entire database.

MATHS

This section is a sophisticated program which allows the user to calculate fields and manipulate data within the database. It is extremely versatile, very flexible and tremendously powerful. Although these words comprise a number of superlatives they are not overstating the case. With Maths you may enter equations, freely mixing field labels and numeric constants, addition, subtraction, multiplication, division and exponentiation can be used in your calculations. Each Maths procedure may utilise up to 20 equations. In addition there are 10 scratch pad or temporary storage locations where you can store intermediate results. The mathematical manipulations which you require are kept in a Maths' Procedure file, which consists simply of a set of equations that you want performed on a particular database. These may be saved to disk for future use. The use of mathematics in a database is, of course, very desirable but it has so many applications that it is difficult to describe it properly. The easiest way is to give an example. Assume that four of the fields are entitled Parts, Labour, VAT and Total Due, then an equation may be:

VAT = .05 * Parts
Total due = VAT + Parts + Labour

There are literally millions of equations that one can make use of in a database depending entirely on the contents of that base. Obviously statistics is a prime example, but so are many other everyday matters. How about keeping a running total of the cost of your wine cellar! If you are not into wine, the running cost of your record collection. Whole home budget programs can be written simply by constructing appropriate equations and entering in your bank details to Data-Writer. Whole business accounts can be put on Data-Writer. The mind boggles at creating a database containing "vital statistics" of males and females. With the appropriate equations one could select for a marriage bureau. Anyway you get the point. Equations are tested for validity as they are entered into the system. Parenthesis is not supported, but we would once again emphasize that numeric constants and field labels may be mixed at will.

SELECT

Again this is a very powerful section of Data-Writer. It enables you to isolate carefully chosen records within the entire database and create a Data file of the selected information. The obvious application of this section is to select names and addresses for targetting sales letters, reports and so on. If your database includes the sex of a person then there is little point in sending advertisements for lipstick to the male part of your list. Many other obvious examples come to mind. Most importantly, Select supports logical relationships. These are essentially the same as those in the interpreter of your computer, namely:

1. Equal to
2. Less than
3. Less than or equal to
4. Greater than
5. Greater than or equal to
6. Unequal to
7. Equal to the right part of the string
8. Equal to the left part of the string
9. Equal to any part of the string

Assume that your database consists of our old friend the mailing list and one of the fields is the county, then: SELECT IF COUNTY = SUSSEX will pull out of the database all the people that live in Sussex. The right and left string manipulations may not be quite so obvious. Normally it is advisable to construct your database with the fields containing the lowest possible common denominator. Assume for a minute that your business is particularly concerned with the sex of a person, then a perfectly valid database is

Mr. J. Smith or Mrs. J. Smith. Selecting by the left part of the string will differentiate between the Mr. and the Mrs. Perhaps you wish to select doctors, then with the left string command you will be able to find them. The reason that we mention the lowest common denominator is that it is probably more efficient (if there is no problem with the number of fields being used) to make the title, that is to say, Mr., Mrs., Dr., into a separate field. If you do this, then, of course, you do not require the string selection because the title will be one entire field. Anyway, once again the possibilities with this powerful section are unlimited. Supposing we want to select from our clients list (assuming we are Stock Brokers) all clients that do not have investments in BL or ICI, then:

SELECT IF INVESTMENT «» ICI OR INVESTMENT «» BL

The above is powerful, but consider combining these manipulations with those of the Maths program and what you can achieve is quite astounding.

SORT

The Sort section is self-explanatory. It will reshuffle the records of the data into a new order for some specific purpose and then write out, if required, the new ordered file. The Sort in Data-Writer is a two level sort, in other words, a sort within a sort. Each level may be sorted in alphabetical or numerical sequence and in ascending or descending order. The maximum number of records which Data-Writer can sort at one time is four thousand five hundred. Sort has one unusual feature which is of particular use and that is the ability to extract a last name from a line. Hence if a field consists of a first, middle and last name, the latter may be extracted with a high degree of accuracy due to special software which examines a name field and separates out the last name. It is very difficult to give any speeds for Sort. When we tried it, it seemed to be very fast, but the problem is to construct a database of sufficient length to get a meaningful reading. We made one of 100 random names and it Sorted it in an immeasurably short time.

LABELS

Labels, somewhat obviously, is the section which allows the user to print mailing labels. It has a number of sophisticated features. For instance, one can select printing formats of one to four labels across. A label format file can be constructed and saved to disk for future re-use. The format of the labels is completely adjustable and address labels can be printed from a number of different files at the same time. If, for instance, one has a database made up of three files, then one only has to enter those file names and all the labels will be printed. You may stipulate all of the following.

The number of blank lines separating labels.

The width of the print zone on the label.

If you are printing more than one label across the web then you will have to define the number of blank spaces between the labels.

You may adjust the left margin as you wish.

In addition to the above formatting options you may define a preset string. This allows you to print a common line on all labels. For instance, ''The Purchasing Agent'' or whatever. After all of this house-keeping has been done, the user may define each field from the database he wants to print on each line. Provision is made for a printer test and printing of the actual base may be stopped at any time. We do not know of a more versatile formatting program than this section of Data-Writer.

LETTERS

We are all well acquainted with form letters of one sort or another. Every sales outlet seems to vie with the other to make a solicitation more and more personalised. Whether or not it is a service to mankind, Data-Writer continues this course. You may create the form letter, the report or whatever with your word processor or you can use the fairly straight forward text editor contained in this section of Data-Writer. Pretty well the only stipulation is that the letter must be less than 6,000 characters in length. We have the greatest difficulty in thinking of a useful functional feature for mail merge procedure that is not contained in Letters. Every part of the letter can be customised or personalised at will and this is not even restricted to the data contained in the database because Letters has provision for pausing the Run so that a particular phrase, date or whatever can be inserted from the keyboard for a particular letter. This may then be used for all letters or just kept to the current one. As we have said, Letters contains a text editor or mini-word processor. We will not go through the various commands; suffice it to say that there are about 15 by which pretty well any formatting requirement can be chosen. Letters contains a provision for calling the name and address twice so that an envelope may be printed at the same time as the letter. The mini-word processor supports sending special Control codes to the printer and many other features, including some dozen or so Control key functions in addition, of course, to the arrows.

REPORT

This section is used to print a report of information from any of your data files. The report format may be created by either using your own word processor or the mini-word processor in this section. Incidentally, although a number of the sections contain mini-word processors they are all self contained within a section. In other words the drive thrashing which we mentioned in the context of other database programs is kept to a minimum. Indeed, it is pretty well non existent. The reports printed by Data-Writer may be as simple or as complex as you wish. Some planning will be required of course. Particularly attention must be paid to the length of the fields, the column widths and so on. This is made somewhat easier by the Statistics section already described, which has a listing of all of the field labels and the maximum number of characters in each field. There are four major parts to any report file, the parameter, heading, formatting and sub-total.

Parameter

The parameter sub-section consists of imbedded commands containing the format codes controlling the printing of the text. They determine the shape of the page and tell the program what limits have been set for printing. There are several formatting commands.

Heading

The heading sub-section decides what will be printed at the top of each page on your report. Again the headings may be as simple or as complex as you wish.

Format

The format sub-section describes how the columns and rows of data in the report will be printed. For instance, it is obviously important to get all the decimal points under each other. The format sub-section will take care of this. It is also important that words be blocked to the left or to the right. In other words this sub-section takes care of the house keeping of your report.

Sub-Total

If you want your report to include sub-totals then you simply type in the name of the field you want to use to break the report into sub-totals. There are the usual number of commands available in the mini-word processor part of the section. The big advantage of the sub-section is that it enables complex report formats to be put together. Obviously the more complex they are the more thought you will have to give to it, but Reports will give you all the details to complete the job.

Data-Writer is compatible with Model I and Model III Tandy machines, the original Video Genie, Genie I, Genie II and Genie III, although we have not as yet had sufficient experience on the latter to be sure. It is, of course, a disk orientated program. It is most important to note that it requires lower case. The authors have been kind enough to leave the software unprotected for the benefit of the customer and it only requires to be backed-up. We are **not** prepared to accept the return of Data-Writer should customers order it when they do not have the lower case modification in their machine. The program will not work without lower case and it is the users responsibility to make sure he has that modification. Compatibility with double density drives is a little uncertain at the time that this list goes to press. Our present information is that the database itself may be written to and accessed from double density, but the programs require single density. Customers are asked to telephone us if this is an important factor in their buying decision. Data-Writer is supplied for the Model I on three disks and for Model III on two disks. On the Model I it is compatible with TRSDOS and LDOS without modification. Other disk operating systems will require patches. This comes about because of the incompatibility of the Microsoft Basic compiler used. As customers will probably know, Microsoft has, to say the least, been very slow in even recognising the existence of the Tandy Model III machine. They still have no compiler for it. Consequently the Model III version of Data-Writer is

supplied on a proprietory disk operating system and it would be best to consider it totally incompatible with other Model III DOS's. It certainly is with TRSDOS. Thus Model III users should for safety sake plan to use the DOS supplied with Data-Writer. This does not necessarily extend to word processor users. For instance, we have constructed files with AJEDIT running under LDOS which are compatible with the Model III Data-Writer.

Note to 1983 Catalogue Re-write

There have been two major up-dates to DATA-WRITER since its first issue. Both were concerned with improvements, some important and some not so important.
A completely new module which, in itself, consists of three sub-modules has been added, entitled ACCESS. Once your database file is created, you can use DATA-WRITER's Access program to review existing records, make changes to records and add new records. DATA-WRITER uses a powerful file access method called "two-level sequential direct access". Whilst it sounds complicated, what it does is simple: It permits access to any record in your database (up to 10,000 records) in one second flat. The second up-date was, perhaps, even more important than the first. It certainly involved a more extensive revision to the system. Each module in this suite has been changed to make it easier to use, or more powerful. For instance, DATA-WRITER now has a 10,000 record capacity, hard disk support and 40 fields per record. Using the word processor, 240 characters may be entered per field; using the Entry module, 45 characters may be entered.
The most important changes, referenced to their appropriate module, are as follows:

ENTRY
Using the (BREAK) key during Record Entry skips you to the command line. We have added an automatically incrementing field. And you can now display the abbreviation table.

EDIT
Repair of the infamous "Internal Error – String Space Corrupt" bug! New HELP command to display control key functions. Improved keyboard debounce.

MANAGE
Automatic creation of a new control file after using Field Manipulation. And now you can merge three files at once.

SPLIT
New program to split a database into several smaller ones, including the ability to split based on a data breakpoint.

STATS
Ability to list the control file.

SELECT
Ability to split a data file into two subsets, those which meet certain selection criteria and those which don't. (You can do further work on one subset, say in MATH, then merge them back). Also the keyword "BLANK" can be used as a criterion.

SORT
Ability to sort 10,000 records. Sort depth is now equal to the full length of your data, not limited to 6 or 12 characters.

MATH
Three temporary variables are non-resetting, so they can be used to accumulate totals or balances through the entire database. Also, you can define a field as integer or fixed decimal format with a specified number of decimal places.

LABELS
You can change the label format after printing has started.

LETTERS
New HELP command to display control key functions. New command to start and stop underlining (for most letter-quality printers). New TAB command. The number of keyboard variables has been increased from 10 to 20. Improved keyboard debounce.

REPORT
Store a report (not just its format) to disk. (You can then load it into your word processor and use it as any text file.) New HELP command to display control key functions. The number of columns on a report has been increased from 15 to 25. Fifteen lines are now available for a report heading. Improved keyboard debounce.

ACCESS
Use (BREAK) as in ENTRY.

The Model III versions now return to DOS Ready at the end of each program instead of resetting. So you can create a CHAIN or DO program to set up and execute a procedure. This can be used to run programs and rename output files automatically.
The new Model I version now supports DOUBLE DENSITY running under LDOS.

UNDERWORLD – BE A BADDIE FOR A CHANGE

Underworld is unashamedly a board game. It is neither an arcade nor an adventure type of game. Its interest really comes about because of its subject matter. There is a certain fascination about trying to win a game as a crook. It is quite an involved game and if one wanted to take a short cut in its description, then it would be to liken it to other well known board games, such as Monopoly. It is similar to that particular game in that the crook's exchequer is increased by either 40 or 20 thousand dollars each time the player passes the Start position.It is an interesting commentary that the game is played in dollars even when it is written by an English author. Perhaps he feels the chance of the crook succeeding is greater in North America! However that may be, Underworld is played by 2 to 4 players. Progress round the board is by way of a random number generator, similar to throwing a pair of die. At the beginning of each player's turn a status report is displayed giving the number of distilleries operating (we are in the Prohibition Era), the number of protection rackets operating, the takings of both and so on and so forth. The board positions are some dozen or so in number, varying from the start and passing through airports, casinos, banks, black market and even including a Chance position. The distilleries must be operated; another interesting commentary is the fact that one is permitted to rob other players. Good fun and it is a change to have a game for more than one person.

LDOS NEWS LETTERS BACK NUMBERS

At this time we have a small stock of all of the back numbers of the LDOS News Letter. The first one is in very short supply and we are not at all sure that we can get any more. Numbers 2 to 5, however, so far as we know, will be available for a while. The charge for these is £4.00. There is no V.A.T., but shipping is 50p each.

QUICKPRO-PLUS – AUTOMATIC PROGRAM GENERATOR

Quickpro-Plus is a file orientated Basic program generator. That is to say the user decides upon the type of program that he wants, gives QP + the details and QP + writes the program. The most widely publicised of such program generators is The Last One (a Registered Trademark of D.J. A1 System Ltd.) and it is, therefore, inevitable that QP + will be compared with it. There are two approaches that one can take in writing software like this. Either one can set out with a very broad brush and try and make the generator capable of producing a wide variety of data handling software or one can restrict it to some extent, to simply producing file handling programs. The Last One seeks to go the first route, QP + goes the second. There is a great paradox in this software if one thinks about it. Obviously, if a person is at least a semi-skilled programmer then he does not need a program generator. They are really for people who are not skilled in programming and want that chore taken off their hands. The paradox is that programs like The Last One, by being all things to all men are also complex in use and one therefore gets the position of a program aimed at a beginner, but actually requiring some skill to use it.

It was because of this apparent paradox that QP + came into being. It is written for somebody with little or no knowledge. You will find no mention of flow-charts and little mention of fields, records and other technicalities. It was written so that a person could sit down in front of his computer, answer a few questions and have a program produced for him, and this is exactly what QP + does. The other side of the coin is that it concentrates entirely on producing file handling programs. You may feel that this is not too much of a problem for in a data processing program it is the file handling part that is the most boring to code and also the most difficult to debug. Actually QP + will do other things which we will explain in a minute, but basically it produces a program which will handle all of your file access and arrangement. You will be able to add file records and you will be able to search for, locate and retrieve these records as and when you wish. Additionally the program which is generated will be able to up-date and change the records and, of course, delete them at will. In addition various calculations and mathematical manipulations may be carried out on the individual fields of the records, although the fields, of course, must be numeric. Up to 50 separate computations can be carried out on these fields and the program will report to you using any of the normal mathematical functions. In addition to generating the program QP + can provide automatic documentation for the generated program and it also has extensive report program generation facilities. Finally, it provides a means of making existing data files which the user may already have, written by other programs, compatible with programs generated by QP + . Let us, however, go briefly through the various functions of QP + .

Program Generation

QP + obviously has to be given various items of data so that it can construct your program for you. The first thing that you do in this respect is to design the screen lay-out. When this option is chosen a blank screen will be displayed, except that down the left-hand side of it are the letters of the alphabet. The operator designs the screen in the particular form that he desires by entering the letter of the appropriate line. The data entered on the screen, for instance, will probably consist of a title and then perhaps various field names such as name, street address, town and county. If you decide that you want the word "Name" on line D, then you tell the computer this and move the cursor along so that the computer will know where you want the word "Name" to start. You will also wish to define the number of characters that can be entered into each field and provision, of course, is made for this. In this way, a total screen is constructed very easily with a minimum of fuss and bother. Programs created by QP + allow the operator to add to and update files. Before a record in a file can be updated it must be located. Hence QP + enables the user to define what item in a file record will be used to locate or access the record in the finished program. If you decide that you would like the Name to be the key then you designate this field as a primary search key. Later QP + will create a special indexing file that will enable the user to gain very fast access to these records. The next stage is to assign numeric fields. It is necessary, of course, for the ultimate program to know which fields in a record will contain numeric data, if only so that it can carry out calculations on those fields. Therefore you must tell QP + which fields are to be numeric. Whilst you do this, QP + enables you to specify the format of the numeric only fields. In other words, the manner in which the number will be displayed, similar therefore to the "PRING USING" command in Basic.

So now we have designed the screen, entered the field titles, defined search keys, designated numeric only fields and settled the format of the latter. QP + is so easy to use that all of this will have literally only taken a few minutes, and yet a large amount of the work is already done.

The next item to which we must turn our attention is the calculation and accumulation fields. QP + asks you at this point whether you require any calculation fields and you answer accordingly. If it is affirmative then you are asked to designate the number of the field (all of the fields which we set up originally had numbers). You will then be asked for the calculation required. As we have said, a large number of mathematical manipulations may be carried out, but basically they are comprised of adding, subtracting, multiplying or dividing numeric fields with one another and with other numbers. The calculation is entered in a simple equation-like form. Supposing, for some reason, one wanted to multiply 10 by the contents of field number 3, one would enter 10 * F (3). If you wish to divide field 1 by 10 and add the result of field 3 then the equation would be F (1)/10 + F (3). As you can see these are logical and are not very difficult. After the calculation is entered the program will test it and give you an error message if it is not capable of being carried out. An accumulation field, incidentally, is just that. It is a field in which running balances may be accumulated. That is about all there is to the calculation entries. Again we would like to emphasize how simple and straight forward it is. The next stage is an optional one. You may enter in what is called a Field Comment for each field that you have created on your screen. A Field Comment allows you to describe in detail just what information is contained in a particular field. Up to 30 characters may be used. The description you enter will appear in the program listing that QP + will create for you and will help you to locate particular parts of your program.

Believe it or not, we are nearly finished. It only is necessary to assign names, both to the data file which QP + will generate and also for your new program. Although not concerned with the actual generation of the program, one further friendly feature is allowed for, namely that you can print out to a line printer a copy of the screen you have created. You may find this handy for future reference. After you have accepted or denied the screen print option, QP + will go to work and generate a program from the information with which you have provided it. You need, of course, do nothing at this stage, and QP + will automatically return to its Menu when everything is done. At this stage your new Basic program has been generated and completed. It may be LOADed, RUN, LISTed or copied in exactly the same way as you would other Basic programs.

Using Your New Program

As we have said, RUNning a generated program is exactly the same as running an ordinary Basic program. Your new program will allow you to add, update or delete data from a Data File, which you named when you first generated the program. When the new program starts to run you will see the screen format which you designed earlier on. At the bottom of the screen will be displayed the functions which you can perform, namely Add a Record, Get a Record, Search and End Program. Options are chosen by typing the first letter of the command. If, for instance, you wish to add a record, then you would type the letter A. As your Data File at the moment is virgin, it would be better if you started off with this command in any event. So after you have typed A the cursor will position itself to the first input field and wait for you to enter data into that field. Entries are terminated with the Enter key. Numeric only fields will only permit the insertion of numbers. Anything else will simply not be accepted. When you have finished, the record will be filed to the Data File which you designated in the set up procedure. If you make an error you can back up after one record has been entered and the procedure starts all over again. To get a record you type in G. You must enter the key for which you are searching and the program will go off and find the correct record for you. You will then be given the option to Change or Delete this record. Editing is done by moving the cursor from field to field. To delete, you simply hit the D key and the record is gone.

The third option is to Search the File. This is a string search, which means that any record containing the characters or number you are searching for will be accessed by the program and displayed on the screen. The fourth option of Ending the program is self-explanatory.

Automatic Documentation
QP + can print out for you an Instruction Manual for any program which it creates quite automatically. There is an option in the main Menu for this and, if you choose it, then, after confirmation that a printer is connected, you will be asked for the name of the program for which you want to print instructions. So long as you have not erased the Screen File from the disk or removed the appropriate disk, the program will go to the appropriate file and print out a set of operator instructions on how to use the particular program specified.

Report Program Generator – Quick Print
Quick Print is, to some extent, a separate program from QP + , but in any event is a most important section of it. It is accessed from the main Menu. QP will create a separate Basic program that will print a report in as many different formats as you may design. These reports may be used to list information that you have in files created by the program which was created by QP + . So long as the Screen File mentioned under the previous section is resident in the system then QP will be able to produce a report. QP starts by asking whether you want to use an existing file or go away and create a new one. If you choose the latter then you will be returned to the program generator QP + . Assuming, however, that you have a file already made then QP will find it and you will be shown the screen which you originally created. If you wish, you can eliminate any fields from the Report program which you are creating. So, this is the first question you are asked, whether or not you wish to eliminate any fields. When, either at the start or after designating some fields, you answer the question in the negative, QP will proceed to the next section and you will be asked to enter the heading for each of the fields which you did not eliminate. The field headings may only be as long as the maximum length of the field for which you are entering a heading. QP will, however, look after this chore for you. Each report that you create can have a special heading or title. You will be asked for this and you will also be asked to give your Report program a name. You are able to custom design your report with QP, so the next question which you are asked is to specify the width of the report. Any width may be specified up to a maximum character count of 132. QP will let you spread out your information in the report to cover two lines if you wish. If QP finds that the information is too long to fit onto one line, then it will ask you to give further information. QP also allows you to specify the number of lines printed on a page and this information will have to be given to it. The program then will automatically number each page of the report and print whatever heading you give it at the top of each page. In many cases it will be desirable to have a report total columns of numbers. QP will prompt you for the necessary information. In a similar way to it being handy to have a screen print of the screen when using QP + , so it is handy to keep a copy of the report worksheet. If you want this it will be printed out for you, displaying the page title, column headings, field numbers and field formats.

Using Your Report Program
The Report programs created with QP operate in much the same way as do the Filing programs created with QP + and it really is not necessary to go over the procedure again. Two options are given to you. When the program is run it will print out the stored data which was originally filed away by the program created by QP + . You are given the option to Get or Search for records and you will be asked for the key that you want for records to be printed in your report. Your report will only contain those records which have, as their key, the key which you have specified. The key, of course, is the one originally specified in the original QP + program. If you specify a Search then you may either print the entire file or print only those records which have the information you want to search for.

Quick Index
You may have filed data that you have created from a program other than the one that you wrote using QP + . The QI utility can be used to make your data assessable by programs that you create with QP + . Assuming that you have called QI and that the appropriate data file is in the system then, on entering QI, you will be asked for the data file's name. You will be called upon to enter various items of information so that QI may know the general format of your file. That data file must be in a non-compressed ASCII form which, of course, most data files are. However, no guarantee is given that your specific data files will be able to be manipulated. We have as yet not experienced any difficulty, but obviously neither we nor the authors of QP + know what files you may have. It may, therefore, be fairer to say that QI is an attempt to provide for data file compatibility.

In summary, therefore, QP + is an extremely good attempt to achieve a balance between the complexity of many program generators and what is the ideal, namely total ease of use. It will perform its program generation, report and indexing duties efficiently with a minimum of user intervention, but when that intervention is necessary, it will be found to be an easy piece of software to get along with. QP + is available for Models I, II and III Tandy machines. It is also, incidentally, available for the IBM Personal Computer, although at this stage we are not sure we will be stocking this version. As there is a Tandy Model I version it is compatible with the original Video Genie and the Genie I and Genie II machines.

Since the above was written, QUICKPRO-PLUS version II has been issued, which comprises two major improvements. The first, the module QUIKFORM, permits free form reporting, and the second, QUIKSORT, is for alphabetical or numerical sorting. This sort is included automatically for the programs which you create. The authors say that this is a high-speed sort, but in view of the state of the art of machine code sorts, we would think that this statement requires some qualification. The form reporting allows the creation of letters and all types of custom forms, including labels and cheques.
Apart from the above, graphics are now added to the display screen, and relational reports are supported, allowing a newly created report program to display or print records based on user-chosen criteria.
The final addition is a type of mail merge. It allows the insertion of data from files into the forms that you design. Thus, a letter can be designed and sent to all the people in a specific postal code area with the letters printed out, sorted by name or whatever.

FRENZY – AND IT REALLY IS

This is a very good arcade type game from the same author, W. Mansell, who wrote Sea Wolf, which was featured in our last list. One can really view Frenzy much as one wants to. When the author first sent it into us he described the screen as having five levels of scaffolding, each connected by ladders. This may well be the best description, but it does seem to us that the screen display or play area can be described in a lot of different ways. Anyway, keeping with the scaffolding and ladders, the idea is that each layer of scaffolding contains a number of bricks that have to be collected by the player who is in control of the little figure dashing round the scaffolding. Unfortunately, Mr. Mansell has laid on a number of monsters, contact with which is fatal to the player. Lest you think the game is restricted to collecting bricks and fighting monsters, it is possible for the player to dig holes in the path of the monsters, the latter fall through and for a little while are out of the way of the industrious brick collector. Control is with the four arrow keys. A certain amount of "Type Ahead" is programmed in, thus, for instance, if one presses the right and up arrows at the same time and keeps them pressed, then the little man will run along to the right, but when he finds a ladder going up he will climb it. There is one man on the screen at a time, but the player is given three to start with. One bonus man is given at each 10,000 points, 10 points are scored per brick and 100 points per trapped monster. Bonus points are available running from 1,000 - 9,000 and are awarded for a varying number of monsters. The actual points are decreed by the level at which one is playing. The game starts on level one and progresses upon the collection of all of the bricks. The game has a certain number of tricks to it in the sense of the method of play, but broadly it is a skill game in the sense that one learns as one goes along. The monsters incidentally tend to gravitate to the man and are in no way set in their course, thus, when a monster reaches a ladder he may or may not use it. Just as Sea Wolf made a pleasant change from the space arcade games, so this one is also rather unique. Sound is available. The title is well chosen. One has to be very fast on one's feet to do well. The only question really is whether it is the player or the monsters that achieve the frenzied condition first.

WILLIAM – THE CONQUEROR VERSION

Mr. S. H. Ford is fast competing with the previously acknowledged master of the computer wargame, namely Dr. Bodley Scott. Mr. Ford has already written Napoleon and the Crusaders and now he brings to us William The Conqueror. It is our normal procedure to

give the historical background to wargames in the catalogue, but even if it were not we would wish to give it on this occassion:

William was born in 1028, he was the illegitimate son of Duke Robert of Normandy. He was the only heir, and was known to his contemporaries as William the Bastard. When his father died in 1035 he became Duke of Normandy, at the tender age of seven.

In those early years his court was a nest of vipers; his guardians nearly all perished by murder or poisoning; he himself frequently had to be rushed from his home at night to be hidden from violence.

At the age of twenty he was threatened by the most serious rebellion of his life. A group of leading nobles gathered round William's cousin and rose in armed revolt. The young duke however was able to ask assistance from his nominal lord, the French king Henry I. At Val-es-Dunes near Caen the rebels were scattered. William had showed that he was a great military leader.

In 1053 a larger coalition of his foes tried again to crush him. By now King Henry had changed his attitude to William, he began to think of Normandy as a threat. In 1054 a French army marched into Normandy in a two-pronged attack, one force devastating along the Seine while the other struck into the Norman heartland. Hearing that the northern French army was feasting in the town of Mortemer, William fell on the French at dawn and completely surprised them. Panicked by the disaster, Henry withdrew.

In 1057 the last French effort to overcome William met with humiliating defeat at Varaville, where King Henry was forced to watch his advance guard being systematically destroyed by the Norman duke, who had cut it off on the west bank of the river Dives.

In 1066 Edward the Confessor died in England, and Harold crowned himself King of England. Over the Channel, William was now assembling a great fleet at Dives-sur-Mer. Later that year William's fleet set sail for England, he had with him 12,000 men in 600 ships. He landed at Pevensey, but found the area was not to his liking, and sailed along the coast to Hastings. There he built a camp and devastated the villages round about, and waited for Harold's arrival. On 14th October 1066 William met Harold at Hastings. William had 8,000 fighting men and Harold had ten thousand. William defeated Harold, but lost 2,000 men. He became known to history as William the Conqueror.

The game starts in 1047 and, of course, the user is playing the part of William, ruler of Normandy. The aim is to secure complete control of the Duchy and by the time of William's death in 1087 the user should hold not only all the lands that comprise Normandy, but must also acquire Maine, and Ponthieu and, of course, must regrettably, conquer England. This wargame is well up to Mr. Ford's normal standard and is supplied with map documentation.

ACM — AC CIRCUIT MODELLING PROGRAM

This program was featured in the August 1982 issue of Wireless World. From that comment alone the reader will appreciate that it is directed towards those customers who are interested, either as a hobby or as a professional, in the field of electronics. The program is written by R. Harcourt, a Chartered Electronics Engineer. As will be understood from the publication of its description in Wireless World it is an extremely important piece of software, the function of which is to plot frequency response graphs of gain and phase for both electric and electronic circuits. The circuits are input into the program using the values of Resistors, Capacitors, Inductors, Operational Amplifiers, Voltage and Current Sources.

ACM is indispensable for designing active filters, RF amplifiers, audio amplifiers and other electronic circuits. It will plot graphs using a normal printer which must be capable of 132 columns. Due to the fantastic amount of calculations that have to be carried out by the program it has been compiled and thus a typical 16 node active filter plot of 50 frequency points may be plotted in only 10 minutes on the Model I and III machines. On the Model II this is cut to 5 minutes.

The graphs plotted on the printer are log-log. If you specify the frequency range for the plot, ACM automatically scales X and Y axes to completely fill the page every time, and gives the logarithmic dB and frequency points on the axes. The phase shift is simultaneously plotted with the gain, using a linear phase axis.

The manual supplied with the software tells the user how to use ACM, of course, it also gives instructions as to how to model transistors using the Current Source element of ACM. As a matter of interest FETs and Valves can also be modelled in this way. Once a circuit is designed it can be saved to disk and of course loaded back into the computer at a later date. In this way a complete library of circuits can be held on the disk.

ACM brings to TRS80 owners who are also radio amateurs, electronic hobbyists or professionals, circuit design power previously only possible using mainframe computers.

PAI — PRICE ADJUSTMENT INDICES

Although it is not generally known, we maintain a register at Molimerx of highly specialised programs, of which we gain knowledge. Normally they have been submitted to us for publication, but do not have sufficient general appeal to warrant inclusion in the catalogue. With regard to these programs we essentially act as a clearing house, bringing together enquiries for a specific type of program and the authors of such software. PAI may be considered to fall into this category in that it is specific to the Surveying and Building Contracting industries. It did seem to us, however, to be of such importance as a piece of software that we should publicise it in this catalogue. We are, therefore, stocking it in our normal way, but in fairness must make the point that it is a specialised type of program.

It is indispensable for both Quantity Sureveyors and Building Contractors, who operate as Main or General Contractors. In the building industry, indices are published monthly for labour and materials used in building contracts. First of all we should explain what the industry indices are. They indicate the relative level of increase or decrease at a specific date as compared with a date that has been taken as the standard. In some ways they can be likened to the Retail Price Index. These indices come in two forms, namely Firm indices and Provisional indices. The former are produced some two or three months after the month to which they apply and the latter are provisional for the interim period. PAI is a versatile program and makes provision for the entry not only of the Base index (entry at the start of the contract), but also monthly up-dates to both the Firm and Provisional indices as the contract progresses. There are forty-nine work categories which cover the entire spectrum of types of work within the building industry. PAI handles all forty-nine categories and in addition specialised engineering and labour only indices are supported. An additional feature of the program is that provision is made for retentions, materials and labour at the start of the contract.

From these indices the program calculates the fluctuations in Work Categories (which are user specified) throughout the life of the contract on a month by month basis and a hardcopy of the valuation is made. In this way the Contractor can at a glance determine the percentage increase/decrease in each of his work categories as the contract continues.

A valuation record is also available giving the net payment and also displays running totals of work valued and fluctuations thereon.

BOOKS

The books which we introduced some six months or so ago which are published by John Wiley and Son have proved to be very successful and as and when they publish new books that are relevant to the TRS80 we will be stocking them. Two new ones are available now as follows: —

FAST BASIC

In our estimation this is an excellent book. It is essentially divided into two. The first part, going up to page 105, contains a very lucid description of what the authors call Controlled Basic. The first 25 pages or so lead the reader through binary numbers and hexadecimal arithmetic. Although this may sound quite ordinary the authors go to quite a bit of trouble to relate everything they say to the TRS80. We personally find this rather refreshing. After this introduction Controlled Basic starts properly and what it really amounts to is a detailed description of many of the tricks and gimmicks which we have all got so fond of with the TRS80. A fairly full address table, for instance, is given which explains most of the locations in the communications area of the computer. Tips are given as to carrying out various short cuts, for instance, the method of changing program size reservation from within Basic and also the lesser known method of merging two Basic programs. A quite full description of the Control Blocks is given and a neat little modification to the TRACE command. Following on this are descriptions of the five Basic tables, namely the program itself, the Simple and the Array Variable Tables, the String Space and finally, of course, the Basic Stack. The final chapter in this section of the book is concerned with the various devices of the TRS80. There are not many users who will not benefit to some degree or other by reading this first half of the book. There are a number of books available now describing the ins and outs of Basic. Basic Faster and Better, for instance, is a prime example. But Fast Basic, or rather the first part of Fast Basic, seems to be very easily digestible.

The second part of the book is devoted entirely to the theory of Fast Basic. The idea is that if one combines machine code with Basic then one gets a faster program. This is, of course, stating the obvious, but there are a number of routines in this second half of the book which may be new to the average reader. Machine language or assembly code is to some extent explained. A useful appendix contains the Z-80 Instruction Set. Various ROM routines are described and particularly nice in this area is an appendix devoted to listing the Labels used in ROM. The Basic key word Jump Table is given, and indeed the book as a whole has something for everyone. It is written by two gentlemen, the first of whom George A. Gratzer is of the University of Manitoba in Winnipeg, Canada. The two books in the Mysteries series, Microsoft Basic Decoded and Basic Faster and Better are specialised works on their own particular subjects. If we had to summarise Fast Basic we would say that it contains a bit of both.

TRS80 COLOUR BASIC

This book is by Bob Albrecht, who has written a number of books on the TRS80, in particular he is co-author of TRS80 Basic. We have admired his previous books, but are not quite so enthusiastic about this one, not because of the contents, which leads one through TRS80 Colour Basic in Mr. Albrecht's inimitable style, explaining its subject in very easily digestible material and giving plenty of illustrations as it goes but because one wonders if it is necessary. It is written in what we always call a "folksy" manner, with plenty of illustrations of funny little men with balloons coming out of their heads. Whether one personally likes this or not it seems to be a method of producing a book which is very popular in our industry, so obviously it is successful. We do not, therefore, criticise it. Our criticism of the book is not of the book itself or of the authorship, but simply it seems to us to a large extent a duplication of the manual which one gets with the TRS80 Colour Computer. Without a doubt it has more illustrations, that is to say, programming illustrations, and these are explained more fully than in the manual. None the less, to a large extent it sets out to do what the manual does, namely to explain Colour Basic. Unlike some microcomputer manuals the Colour Basic one seems to us to be quite reasonable and one, therefore, wonders whether this book was really necessary. Having said that, we would reiterate that it does have more illustrations and explanations; so its application is for those who are having difficulty in assimilating the manual supplied.

UPDATES

HORACE

Horace is described elsewhere in the catalogue. In the new typeset version at page 93 and in the older catalogue on page 133. Horace is an extremely good Flat and National Hunt racing aid to betting. We have always wanted to be able to publish it on disk, but the original had to undergo a large number of changes before this could be done. We are happy to say that Mr. J. Norris, the author, has now provided us with a disk version, which in view of the length of the software is a much appeciated improvement.

CHRISTMAS LISTING

Our Christmas listing traditionally contains a larger percentage of games than other listings. However, we do not really have too much control over how authors write their programs so far as the timing is concerned. This year the Christmas list has coincided with the release of a large number of items of important, serious software. It seemed to us that customers would prefer to have notification of this new software as soon as possible and we have, therefore, included it in this list. The result of this is that the 1982 Christmas Listing is considerably larger than normal and contains not only some excellent new games, but some important new utilities and languages as well.

CYBORG – THE SPORT OF THE FUTURE

Every Christmas we try to lead off the list with a cracker jack arcade game, so as to lure our customers away from the turkey and Christmas pud. This year is no different. Cyborg is not only a new arcade type game it is, we feel, an entirely new type of arcade game. It is amazingly hard for an author to come up with a new program that can be described as a different type of arcade game. We get a large number submitted to us and we are in a position to see how fantastically hard authors try to do this and the amount of ingenuity that authors show in trying to achieve this object. The co-authors of Cyborg have, we feel, achieved a breakthrough. As we continuously say in this catalogue, however, arcade games are very much a matter of taste but Cyborg does combine the exciting action, speed and manoeuvreability of a Defend/Strike Force/Penetrator/Invader type game, whilst imposing at the same time the necessity of having to use one's intelligence. The authors have also somehow managed to instill some of the spirit of the game which has made Pac-Man (from Atari) so popular. The game, therefore is a sort of shooting, hunting, gobbling, running around type arcade game!

Having tried to get across the background of the game and its enjoyment, we will try to be a little more specific. The game is played against the background of a massive complex, which is itself split up into 20 smaller sections or complexes. You may choose two scans, a long range and a short range. Obviously the latter shows you the complex in which you are presently manoeuvring and the former a map of the entire complex. Each complex contains mines, robots and signal modules. The object of the game is to retrieve 12 signal modules in each complex. To do this you are given a sled which you can manoeuvre around the complex. Some robots and all mines are stationary. If you collide with either you have had it. Randomly interspersed around the complex, however are mad little robots which futilely run around at high speed. Again if you collide with one you are dead. In case you think the game is restricted to finding modules – think again! You can wipe out the robots which, incidentally, travel at two speeds. You can also de-activate mines. To do either of these you must have your force shield activated. As with all arcade games you score points. Annihilating a slow robot will give you 30 points and a fast one 60. De-activating mines is worth 100 points. Incidentally, your short range scanners are de-activated until you hit a signal module. Each one you manage to collect is worth 100 points. If you score 20,000 points you will be awarded another sled, up to a maximum of 7. If all of the above is not enough, consider the fact that we have only described one complex and there are 20 of them. Each succeeding complex has a slightly faster speed and a few more robots. Finally, in addition to all these odd things, you are also fighting time. The time allowed to obtain the signal modules in your present complex is measured by your bonus scores. If this reaches zero you die. From one to four people can play Cyborg. It has very good arcade type sound and is compatible with the Alpha joysticks.

Cyborg probably has the best graphics that we have seen on a TRS-80/Genie arcade game. The graphics of the complexes, of course, are not too exciting, but the commands, titles and general background of the game feature quite unbelievable simultaneous graphics and there is no doubt that these add to the excitement and enjoyment.

DELTA TAU ONE – PENETRATE ALIEN CONTROLLED SPACE

At first sight this appears like a fast version of Invaders, but there is a lot more to it than that. The mission objective of the player is to penetrate alien controlled sectors of space, destroying all positions and allowing the Galactic Fleet to occupy the area. The aliens come at you in a similar orientation to Invaders, but not in a similar way. They attack you in a haphazard, random manner from all directions. The graphics of the attack is extremely good, fast, crisp and very definitely on the offensive. The galaxy is split up into sectors. You travel through these by way of either (at the discretion of the player) a hyperwarp control or if you have destroyed all of the aliens in that particular sector, then you are automatically taken on to the next one. The first sector is different to the others. It has eight alien fleets in it, which you have to destroy. The following sectors have one fleet in each sector but the sectors get harder to occupy as one progresses. For instance, each sector has a more powerful alien fleet in it. You start off the game with four Galactic Empire ships and four units of hyperwarp energy. One of the latter will be dissipated if you go from sector to sector. A bonus Galactic Empire ship is awarded for each 10,000 points. You also get a bonus ship at the beginning of each sector. You attain further hyperwarp energy for each 10,000 points. The first sector is the easiest, mainly because in that sector the aliens do not fire at you, but attempt to destroy you by

collision. In the second, third and fourth sectors the aliens are equipped with Photon torpedoes which will destroy you if they hit. After the four sectors the aliens fire torpedoes at different speeds, although the faster they are the smaller the chance is of them destroying you if they hit. A nice touch is that the last three aliens in every fleet are tough little beggars and will stop at nothing to eliminate you.
The basic scoring is 10 for a fighter, 20 for an interceptor, 30 for a cruiser and 50 for a flag ship. These scores are appropriate when you hit the enemy at the top of the screen; that is to say, when it is not attacking you. If, however, you are sufficiently proficient to hit the aliens as they actually come at you then the score is doubled.
Delta is supplied on tape but can be transferred to disk without problem. It supports sound of reasonable quality.

SPACE GOVERNOR – A SUCCESSOR TO THE GALACTIC TRILOGY?

There have been several strategy games based upon the idea of running a galaxy in one form or another. Galactic Empire was probably one of the first. That was a strategy game whereby the object was to conquer the galaxy. This was followed by Galactic Trader and Galactic Revolution. Space Governor to a large extent, although written by a different (English) author, carries this tradition on, but as indicated by the title, rather than fighting for the galaxy, revolting against it or trading in it, the purpose of Space Governor is that the player is being sent out by the Central Galactic Authority to govern a section of the galaxy. He is required to maintain peace and order amongst the star bases within his sector and to offer an incentive for good governorship, the governor is able to retain any income in excess of a certain level. On successfully completing a term of office, the governor may also gain promotion to the Central Galactic Council. The object of the game is that the governor should finish his term of office with as big a bank balance as possible.
In order to conduct his governorship, the governor has use of a space craft – GC43218. It is equipped with no less than six computers for Intelligence, Navigation, Search & Combat, Taxation, Production and Status. The new governor is given the option to choose his own specifications for the GC43218. He may make the following decisions:

1. To have an annihilator. If chosen this occupies the space which would be occupied by 250 fuel charges.
2. To have hyper-space drive capability; this would lose space for 125 fuel charges.
3. The number of hyper-charge fighters, each occupying a space of 5 fuel charges.
4. How many hyper-charge turrets to have fitted, each carrying a penalty of 50 fuel charges.

After these decisions have been made the total fuel capacity of the craft will be displayed.
Star bases are solar systems with habitable planets and docking facilities for all craft. They are classified in three ways by their level of technology, capacity and loyalty. The level of technology has five classifications. Capacity ratings vary between 4 and 20 and loyalty ratings are given a classification according to the ease or otherwise of controlling the resident star base race. For instance, a rating of 1 signifies a normally placid race, a rating of 5 a rebellious race. The use of computers on the craft is, of course, a primary factor in whether or not the player wins the game. They are complex and space does not permit the description of each one in detail. Briefly and in general their uses are as follows:

Intelligence Computer
The purpose of this computer is twofold. First it supplies reports on the state of revolt or weapons of a particular star base. This data is divided into four sections. Secondly the computer supplies details of any nine star bases and gives information on the star base level of technology, capacity, loyalty and taxation.

Navigation Computer
This is self-explanatory. It provides a report on the distance from the present position of the craft to any other star base in the sector. A two dimensional map is displayed, along the lines of star maps in Galactic Empire and Revolution. The distances given are in parsecs squared (sic!) and one fuel charge will move the GC43218 five parsecs squared. The computer will move the craft to any star base required, subject to fuel capability. Alternatively, the craft can travel through hyper-space. This is very fuel efficient but as no hyper-space guidance systems have been developed the destination will be random. This obviously carries its own set of dangers.

Search Computer
With this computer the governor may conduct a search for illegal warcraft. If they exist they may be located and destroyed. If the search is unsuccessful then Central Galactic Authority relations may deteriorate and the governor may be fined.

Combat Computer
This computer is activated when the craft enters a star base area under revolution. The governor is given the choice to perform a scan before entering and depending on the result of this will be his decision on the conduct of the combat. The weapons available are somewhat mind boggling and span a full spectrum from hyper-charged fighters to hyper-charged turrets, not forgetting the annihilator which can destroy an entire planetary system. The fighting strength of an opponent depends on his level of technology and the number of fighting craft that he owns.

Taxation Computer
The governor may, at his discretion, double tax most star bases in the sector. There are three exceptions to this, the most important of which being that only nine star bases may be double taxed at any one time.

Production Computer
The governor is responsible for ensuring that the resources needed by star bases in his sector are available. These resources are simplified by the Production Computer into two groups, food and raw materials. Food will need to be exported and raw materials imported. Changing the levels of imports and exports carries an overhead in credits (which is the currency used). If this is judged incorrectly and demand exceeds production stocks will obviously run out and emergency imports will be required, with a far heavier overhead. Food demand is determined by the number of non-revolting or annihilated star bases. Food production is determined by the total capacity of all technical level 1 star bases which are not revolting.

Status Computer
This is self-explanatory and provides the governor with details of his financial position and craft status.

Space Governor is a complex and fascinating game. One point that we rather like about it is a negative one. We always thought that the Galactic series tended to make strategic constraints for the memory demands of graphics. To write a good game one really ought to decide whether it is going to be a graphic game or strategic. Space Governor is the latter. Space that might have been used for graphics has been used to make the strategic side of the game more enjoyable. Space Governor is a tape orientated game.

DUEL – AT HIGH NOON?

Unlike Space Governor described above, this game is strictly a graphics game. Elsewhere in the catalogue you will find a game called Show Down, Duel is an improved version but by an English author. The purpose of duel is for either one or two participants to fight out a Wild West gun slinging match. When only one player is taking part, of course, the computer takes the part of the other. The graphics are very good. One of the great difficulties of animating graphics on a TRS-80/Genie is to achieve a life-like motion for a person walking. Obviously the two combatants in this game move quite a bit and the author has got over the difficulty by making them walk at a slight angle, which gives two big advantages. Firstly that the motion is more life-like and secondly that it gives a slight three dimensional affect. The motion of gun fighter one, which is the one controlled by the player if he is playing the computer, is with four keys. He can, of course, control the shooting of his gun fighter. Each player has three lives and up to six bullets before reloading. At random times a stage coach will appear from the bottom of the screen and if the gun fighter does not watch out he will be run over. A rather unfair advantage is taken by the computer because if a single player game is taking place, then the computer's gun fighter cannot be run over. Being shot or run over of course costs a life. In a two player game each player can have up to three bullets in the air at a time. When a single player is fighting the computer, however, he can only fire one at a time. As we have said this is an unashamedly graphic orientated fun game. It has sound. It comes on tape but can be put onto disk by the user.

EPIC HERO

Although Brian Howarth's series, Mysterious Adventures, essentially monopolizes the TRS-80/Genie (and now many other machines) adventure market, other English authors are still writing adventures from their own particular discrete viewpoint. Three such adventures are known, collectively, by the title EPIC HERO and are as follows:

EPIC HERO 1 — OCEAN HUNT

All the fun and fascination of a treasure hunt out on the ocean briny. The object of this adventure is to find two treasures and return them to the Fishing Tackle Shop from which you set out. Before you can find the treasure you have to find the island, presumably a South Pacific one, but will it be full of cannibals or shapely grass-skirted young ladies? For you to find out, but you must be careful. A gentle hint — take swimming lessons before you start this one.

EPIC HERO 2 — DUNGEON OF DEROJHEN

In this adventure you take the place of a warrior, a subject of good King Brion. Presumably you are his favourite warrior because he instructs you to find the Jewel of Derojhen. King Brion needs this because he is having problems with the evil wizard, Sharloebon. The jewel will nullify the wizard's evil spells. The wizard's castle is probably not the most healthy of places to be, but when you bear in mind that you have to penetrate the dungeon you will see that you will have to have your wits about you. In addition to your wits, for self protection you will need a certain amount of intuition and luck because it will be necessary for you to find out what lurks within the three Halls of Cunning. At the same time you should be aware of the Keeper!

EPIC HERO 3 — VENUS MUST LIVE

This is a space adventure. Sometimes adventure authors go mad and change the venue of their plots from the more traditional wizards and mediaeval times, to the future. In Epic Hero 3 the time is 2023 and Earth is colonising her sister planets. In order to carry out this colonisation the funding is obtained from mining companies wishing to extract valuable minerals from the planets. Scientists have noticed unusual electro magnetic disturbances on the surface of the planet Venus which could well be created by a sentient life form. This obviously is making life rather complicated for them and being wise scientists they have not made the knowledge public. As often occurs in the scientific world they decide that some poor chap will have to act as a guinea pig and make a clandestine trip to Venus — guess who?! You are sent off to Venus in a sedated state. Unfortunately the medical facilities regulator malfunctions on the way, so naturally you arrive at your destination having forgotten what your mission is and also what all the special equipment aboard your ship is for . . . . . remember you were chosen for your intelligence and common sense.

POOLCAST — A FORECASTING PROGRAM

We already stock two pools forecasting programs. The difference of this one over the other two is twofold. First it is strictly disk orientated and secondly it is written in machine code and thus has the benefit of speedy operation. Any forecasting program has to work on data input by the operator. In other words, the bottom line is always correctness of the data input by the user. Poolcast has an in-built advantage over tape programs in that once the data is input it can be stored out easily to disk and, although it requires approximately one hour to build a complete Football League Table in data memory, it only needs to be done once, for after having been saved to disk it may be used in following weeks. The author has made the data entry particularly easy by adopting a full screen format with fully automated cursor control. A screen editor is also provided for corrections. Forecasts are computed from the information contained in the League Tables and predictions are made for match results, for draws, aways, and homes. The user may, therefore, tailor the results to suit his own personal preferences. The results can be output either on the video display or to the line printer.
One of the vexatious problems that a prospective author of any forecasting program has to face is that of bias. Whatever procedure is used in a program the ultimate procedure in order to obtain a forecast is that points or credits previously decided upon by the author are allocated to two teams depending on whether various parameters have or have not been met. A team playing at home who is at the top of the League and who is playing a team at the bottom of the League gets a certain number of points allocated within the program. In the case cited, perhaps they would be, on a scale of 1 - 10, ten. The reverse set of circumstances would, on the same scale, perhaps result in one credit. This is all transparent to the user but in the end these credits, points or whatever one wants to call them are added up and the most probable forecast made. What the author must decide is whether or not he should add a facility so that the user of the program may alter the calculations which we have described. If, for instance, in the first case cited in which 10 credits might be awarded, the centre forward suddenly broke his leg the night before the match, then the likelihood of the team winning is less. The problem is how much less. Some forecasting programs will insert a bias, some such as Poolcast leave it to the user to make up his own human mind as to how much weight he should place on a given catastrophe such as that mentioned. In other words, Poolcast produces a statistically correct forecast. When the user gets that forecast he must mentally add a bias of whatever weight he feels is appropriate to the forecast. The data entered into the program per team and obtained from the League Tables, which is, of course, the data upon which Poolcast will make its assessment, is as follows:

Number of games played	Home matches won	Home matches drawn
Home matches lost	Home goals scored — For	Home goals scored — Against
Away matches won	Away matches drawn	Away matches lost
Away goals scored — For	Away goals scored — Against	League points

IMAGE PROCESSING KIT — HIGH QUALITY REPRODUCTION

This package is somewhat different to our normal programs and perhaps we should get the differences out of the way to begin with. First of all a quick description. An image processing procedure is one in which a camera, the type normally hooked up to a video recorder, takes a picture of a subject. This picture is digitised and after various processes finishes up as a disk file on the computer. By way of a good printer such as the Epson MX-80 series, this file can be converted back into a picture of the original subject. The quality of the picture, with a good printer, is quite amazing. The quality with a non-graphical orientated printer is reasonable. As will be seen from the above description at least two items of hardware must be purchased in order to construct one's own pictures. Consequently this package is not a complete one in that sense. Buying it will not enable the customer to go out and take his own pictures unless he has the additional hardware. What it is is a package by which the user can get a very good idea of what will result from a complete set up. In other words, Image Processing Kit gives you the opportunity to conduct experiments in image processing without buying the expensive hardware. You will, however, be restricted to the images which are supplied with the kit. The kit consists of six different files, each containing an image, already in digital form. There are also simple programs for getting the images on and off the disk as well, of course, as displaying them. Sixteen pages of documentation are supplied with the kit describing in detail the working of the program and outlining further experiments that may be performed. The images can be viewed on the VDU if you wish but, of course, the resolution is not good, so a printer is pretty well mandatory. The kit contains a machine code program to drive the MX-80 so that the final printed image is made up of dots, the compactness of which make up darker or lighter tones. The source code for the MX-80 driver is supplied in the kit and hence it is possible for a reasonably adept programmer to alter it to suit any type of printer. For customers who are not into machine code the same program is also written in Basic. This, of course, takes longer to run, but the result is the same.
We would like to once more emphasise that this kit is intended as a starting kit to introduce interested customers to the world of image processing. It is intended as a spring board for the users on experiments and programs. By writing programs to perform the experiments outlined in the documentation the user can gain insight into the type of processes that NASA performs on its deep space pictures.

POWERMAIL – THE ULTIMATE IN MAILING LIST PROGRAMS

This program comes from the pen of Kim Watt and is a simply fantastic mailing list program for our usual machines. It is a highly sophisticated mass mailing system written in machine language for ultra high speed operation. The sheer capacity of Powermail is staggering. It will handle a file of either up to eight megabytes or 65,535 names, whichever is the smallest. Despite this, the program itself only occupies 4K of available RAM and, hence, will run in as little as 32K, with one disk drive if necessary. There is no doubt, however, that 48K and two drives are desirable. The program will sort the entire maximum file size and as a matter of statistical interest it opens up 168 files simultaneously in the process! All of this is rather mind boggling, but what is truly astounding is the new concept with which it has come up. Basically this takes two forms. Firstly by writing the program in machine code and adopting a number of extremely clever techniques the "slow" periods of a mailing list program execution have been eradicated. All operations are fast and slick. The second new concept which is of such importance is absolutely stunning. Normally mailing list programs enable the user to define sort keys and put in various parameters so that to some extent the program can select and specify categories of names to be labelled. Powermail has no less than 24 flags, all user definable and user changeable at any time. Each flag may be up to eight characters in length and may contain any characters. The flags are markings that the computer puts on each record. As we have said, the titles of them can be defined by the user, hence the user can make every record selectable by one or more of 24 different parameters! Perhaps the best way to explain this is to give an example.

Assuming that we have 20,000 names and addresses and that we are in the mail order business. Most times we will not wish to mail out to every person on the list. We might only wish to mail to those that live in Surrey or are female or those who have bought within the last six months or those with only one eye. All the user does is to make all of these a flag. So if we have a one eyed female living in Surrey who has bought within the last six months we will set those flags when we enter the name and later the program will select only persons in those categories. This is a fantastically powerful concept. Furthermore, it is made extremely easy to use. All it is necessary to do is, when first setting up the system, define what the flag names are to be. One might be "Ordered?" another "Had List?" and so on. These may be edited at any time and, of course, as 24 are available it is unlikely that any user would fill them all up.

Before we get into a full description of Powermail, there is one other feature which we should like to mention, namely, the extreme ease of use, and particularly the ease of entry. Bear in mind that this system is written with the high volume user in mind, consequently Watt had to come up with some system of entering data which is simple to use when used repetitively. We think that he has done a pretty good job, for he has gone to what we might call the Screen Edit method. When entering data the screen is split in two. The larger, top part contains the following field names: Last Name, First Name, Company Name, Address 1, Address 2, Town, County and Postal Code. There are also two data fields provided for telephone numbers or whatever. When entering, the operator has complete freedom throughout this area. Entries may be made in any order, one may nip back or forward with the arrow keys. On the other hand, unless overridden with the arrow keys, the program itself will logically take you from one field to another, starting with the Last Name and finishing up with the Postal Code. There is never any doubt as to what is going to go onto the file because it is all there in front of you and is always capable of being edited. In the lower and slightly smaller part of the screen are listed the 24 flag numbers. When the cursor takes you down to these it will give at the bottom of the screen the name which you give that particular flag. You can then enter in simply a Y or an N. When you are entering the fields an indication is shown by a graphic line as to how many characters may be inserted into those fields and you cannot exceed the count. These counts, incidentally, are as follows:

Last Name	15	First Name	12	Company Name	18
Address 1	24	Address 2	10	Town	16
County	8	Postal Code	10		

Powermail is Menu driven. There are a few very small sub-Menus, but the main Menu consists of five options plus an exit, these are:

1. Initialised files
2. Enter records
3. Edit records
4. Sort file
5. Print records

Obviously when you use the system for the first time the first option must be used, that is to initialise files. Powermail uses three data files entitled INDEX/ML DATA/ML and ADDER/ML. The DATA file is obvious. This is the mailing list into which the names and addresses go. The ADDER file, however, is a very nice technique for it is a sort of temporary holding file and may be used without the other two files being present. This is a big plus for larger systems, where additions to the mailing list may be made on remote computers. Powermail supports hard disk, in addition to floppies, and, of course, a hard disk cannot be carried around as a floppy can. Hence, if one has all of the files on the hard disk it is perfectly feasible to put ADDER onto a floppy and have names and addresses added from another computer. There are other advantages to this system in that the file will, of course, be much smaller than the main mailing list file and, hence, easier to manipulate in a number of ways. There is a command in the program to merge the ADDER file with the main mailing list. This only takes a few seconds. The capacity of Powermail to store names is approximately 6,000 names in each 800K of disk storage used. This is regardless of whether it is a hard disk or floppy. As a matter of fact Powermail stores two records per sector of 256 bytes. The INDEX file is used for a number of housekeeping purposes, probably the most important of which is that the flag definitions are stored there. One of the advantages of our newly introduced Data Writer program is that its file manipulation is rather unique and results in very little thrashing around of the drives. Precisely the same may be said of Powermail.

The next item on the Menu is selected when one wishes to enter new records to the file. We have already described above the ease with which this is carried out. One feature that we particularly like is that, normally on a mailing list program, if one hits the Enter key then one of two things will happen, either the previous data held in that field will be retained or it will be erased. The point is that there is no facility for doing either. In Powermail there is. If one hits the Enter key then existing data will remain (this also means, of course, that an existing blank field will remain blank). However, if you want to erase the entry in a field, one simply hits the space bar once and then presses Enter, this clears the field. As we have said, the order of input follows logically, but need not necessarily. The big point we are trying to get across with the entry section of the programs is the complete freedom of movement. One can enter as little or as much as one wants with the utmost ease, and being written in machine code it is really fast. That cursor can nip around the screen like mad. Hitting the Enter key at the end of the entry to one field causes the cursor to appear at the next field, with the character indicator correctly adjusted, literally instantaneously.

The next choice is to edit records. The Edit sub-Menu permits you to either edit records or edit flags. Taking the easier one first, editing flags is self explanatory. It is a method by which the name of a flag can be changed. Editing a record is much the same as entering new data except that one selects the field upon which the editing is to be carried out by number. The whole point about editing in any mailing list program, however, is not the editing itself, but finding the record which one wishes to edit and more specifically still, the speed with which that record is found. Powermail has a very versatile wide ranging method of finding records and indeed when you consider the fact that one could, theoretically, have eight megabytes or 65,000 odd names, then the method of finding one individual record had better be good or someone is going to sit in front of the machine all day.

Parenthetically, the maths of the eight megabytes and 65,535 names do not completely correspond. Probably the reason for this is that, although when speaking about megabytes, one usually means exactly one million bytes, 1K is taken as just over a thousand. It may, therefore, be that whoever drew up this particualr specification meant not eight megabytes, but 8,000K. Anyway, the difference is pretty minute for eight million bytes would hold 62,500 names. Whilst digressing there is one other point which we should make. We continually mention the very high capacity of Powermail. This is because with the advent of hard disk for the Model I and Model III Tandy machines, and shortly for the Genie machines, the capacity point is obviously extremely important. Indeed, we do not know of another mailing list which could cope. Powermail is, of course, equally efficient in low capacities. Indeed, we did our principal tests on it with only 200 names.

The first thing that you must do in order to find a name is to select a field by which to search. As we have said, the fields on the screen are now numbered, so this is not too difficult. If the mailing list has been sorted, then pressing Enter at this stage, that is to say, instead of a number will default the choice to whatever field was used as the key for the sort. This is useful sometimes when, perhaps, an inexperienced operator either does not know or has forgotten which field was used for the sort. This is only a convenience feature. Selections may be made by any field, not just a sorted one. After the Search field has been selected the operator is asked to enter the data by which the search is to be made and this is where the versatility of this part of Powermail becomes apparent. Essentially, Powermail supports three distinct types of searches. The first is Wildcard, the second Binary and the third Instring. We will take these individually, although hopefully come to a summary at the end.

Wildcard

A Wildcard search means that any letter may be used to represent another letter. Just as in poker, in the "deuces wild" version a two of any suit can be used to represent any other card, so a wildcard letter in a search may be used to represent any letter. Two wildcard symbols are used, the first is the question mark. We will use an example of the name Tom, thus T?M means that the centre letter may be any letter you want, but the first and last letters must be T and M respectively, and the number of characters must be three. For example, it would find a match to TIM. The second wildcard symbol is an asterisk and when used after letters it means that the key will find another field containing the first letters but they must be first and the character number must check. Thus, our friend TOM* would find TOMORROW, TOMMY etc. Yet another nice feature of Powermail is that the old problem of upper and lower case is eradicated. Most current mailing list programs will not find TOM if Tom is entered as the Search key. In Powermail everything is converted within the machine, thus, the file data or the search string may be in upper or lower case or mixed. A side effect of this feature is that if you enter merely an asterisk, then everything will be wild, hence, everything will match and, hence, the whole file will be displayed one at a time. As each match is found it will be presented to the screen so that the operator can decide whether it is the correct one. Powermail is written in machine language and is, therefore, fast, but do not forget that it also has the capability of dealing with vast mailing lists. It will search 3,000 names in 5 seconds under this Wildcard feature, which is fast, but if one had a file of 62,000 names it would take considerably longer. Hence, another feature is added called a Binary search.

Binary Search

The Binary search method only works with a file that has been sorted. It will not operate on an unsorted file. We will not go into the technical details – suffice it to say that it will search the 3,000 names that we just mentioned in one second; five times faster than the Wildcard search! Wildcards are not permitted in the Binary search. It is necessary to enter the exact name.

Instring Search

Customers will be aware of the Instring feature in Disk Basic, Level III and so on. It can also be constructed quite easily with Level II Basic. What it means is that the search will find a set of characters wherever they are in a field regardless of the number of characters in that field. The only stipulation is that the search characters must appear in the field in the order in which they are stated, Thus, our TOM key would pull out Atomised, Lobotomy, etc. As a matter of fact this is usually the method of search which is more commonly used. Consider, for instance, if you are told to pull out the record for "ABC Company". It might have been entered as "The ABC Company" or "The ABC Company Limited". For either case merely entering ABC, or better still ABC Company, would locate the record. The symbol in an Instring search is the greater than sign. The following summary may be of use.

TOM	Record must match exactly, and be 3 characters long.
T?M	3 characters long, start with T, end with M.
T*M	Anything that starts with T (M is ignored)
T*	Same as the above example.
!TOM	Use Binary Search for the record.
!TOM*	Use Binary Search, must start with TOM.
> TOM	TOM can be anywhere in the field.
> T?M	T and M anywhere, but 2 characters apart.

Once a record has been located its data will, of course, be displayed on the screen and a number of options are given as follows:

Next	Edit	Write	Rewind	Garbage	Menu
First	Last	Kill	Unkill	+	–

Some of these are obvious. For instance, the Next locates the next record that will match the search string; Edit is self explanatory, Write will write the currently displayed record back to the disk. Rewind is an interesting command. It will restart the search back at the beginning with the first record that caused a match. If you pass a record, by mistake, this will enable you to go back to it. We will skip Garbage for a minute and proceed to First, which positions the file pointer to the first record in the file, and Last, of course, does the reverse. Kill and Unkill are rather fascinating. The first is a bit of a misnomer because in fact it flags a file for deletion. The data is not at this stage actually removed from the disk, hence it may be restored at anytime with the Unkill command. If you actually want to remove the killed record from the file, then you do so with the Repack option in the Sort utility, to which we will be coming in a minute. The plus and minus signs advance or retreat to the following or preceding record. The Garbage option was left out because it is rather an unusual one. What it does is to search the file until it finds a record that contains garbage, that is to say, non ASCII data. Quite often, particularly in the larger mailing lists, garbage creeps in. There is also a feature in Powermail which goes some way in converting existing lists written with other mailing list programs to compatibility with Powermail. Such a process almost inevitably creates some sort of garbage. Transmitting mailing lists from one computer to another either by direct hook-up or by telephone also, almost inevitably, creates garbage. This command is also very useful for locating records which have been flagged for kill, for it so happens that the flag is a non ASCII character.

In case you have lost the thread of this discussion, we are still talking about the options which come up on the main Menu. The next option that we must deal with is Sort. We have never been quite convinced that a sort is particularly advantageous in a mailing list program. However that may be, Kim Watt decided to put one in Powermail and as we have mentioned earlier, from time to time he uses features of it, in other sections of the program. Powermail supports a two level sort, that is to say, one may define the primary sort field and a secondary sort field. If you define two then you have the option of purging any duplicates found during the sort process. Optionally, every time a record is found that has an exact match, that is to say, both fields completely identical, then it will be flagged for deletion as if it had been marked for killing. Powermail will sort an entire list however long it is. We do not have any figures for sort speed. Many thousands of records would have to be entered before any figure would be measurable. Suffice it to say that the program is written in machine language by an expert. There are some subsidiary commands in the Sort section. The first is to Merge. This will take all of the records in the ADDER file and add them to the DATA file. There is a Convert command which will allow the conversion of existing mailing lists to a format compatible with Powermail. Three alien mailing list programs are supported. None of them are widely used in Europe. It is not known what the effect of an attempt to convert other mailing lists would be. Customers interested should contact us as we are going to try and put our own mailing list on this program and may have more information by the time this list goes out. Presumably one necessity will be that the alien list be divided into two records per sector. The final option on the Sort Menu is to Repack data. This causes Powermail to scan through the entire mailing list and reclaim any space that is assigned to delete records.

The final option on the main Menu is to print records. Pretty well any possible choice seems to have been allowed for. First of all you may choose how many labels you wish to be printed horizontally. Labels come in a multiplicity of different webbings. The program seems to accept any entry under this heading up to 99, but of course practically one seldom sees more than four address labels across a web. The user may define the width of the label. The user may also define the length of the label in lines and also the label format. There are two formats, the first will result in all of the record being printed except the flags and the contents of the two data fields. The second format will print as the first, but include the data fields which will be printed above the name. A sample label may be selected for printing and finally, for the people who send more than one mailing piece out at a time to a customer, one may define the number of copies of each label that one wants.

The importance of the flags to Powermail becomes apparent when one comes to print labels. It is indeed a unique feature and sets Powermail apart from similar software. Take, for example, a mailing list where the first flag is used to represent that a customer has received your catalogue number 1. A simple use of the flag system would enable you to designate that only customers who have not received that catalogue should receive the current mailout. You direct the program to select your labels simply be inserting a + or – in front of the flag number. Flags are simply yes/no devices. Thus setting the condition –1 would mean only print records which have the Y number for this flag. In the previous example, therefore (mailing to customers who have **not** received catalogue number 1) one would set the flag as –1. In this way a vast permutation of selections can be made easily and automatically. In addition to the singular flags, one can designate a range. Thus, entering a command line +1/17,–22 translates into: select customers who have "yes" entered to flags 1 to 17 but who have "no" entered to flag 22. The power of the flags has still not been fully explained because there is another parameter. This is entitled "Action". Assume our previous example of the current mailout being sent to all customers who have not received your catalogue. The user does not really want the chore of going through the list after the list has been sent out to change all the flags. If one enters the condition –1 and then the Action entry of +1, then the catalogue will be sent out to everyone who has not had one and at the same time the flag will be updated to show that now they have. It really is hard to think of a mailing list which can have more features. There is, of course, a parameter which allows one to print out the entire list regardless of flags. You can print out

the list either continuously or with a pause as each record, that fits the flag determination, is found. In the normal case, of course, all of the names on the list which match will simply be printed out. When the pause option is taken however, one is permitted either to print, to skip or to quit. The VDU will show three counters: the total number of records in the file, the number of records that have been sent to the printer and the number of records that have been skipped. Incidentally, one of the additional advantages of Powermail is that at all relevant times it shows the user how many records are on file and what the capacity is for future additions.

TBA – AN ACRONYM FOR THE BASIC ANSWER

LDOS but there is a LDOS6 (TRSDOS 6) version

For some considerable time people have been trying to convince authors who use the Basic language that they should write their programs in a structured and organised manner. In reply the authors have been saying that they cannot do that because, like it or not, they are constrained by the use of line numbers. In other words, if one writes a structured program and at line 10 needs to branch into a subroutine which is going to be written later, then to say the least it is difficult to structure unless one leaves that GOSUB statement blank, because at that stage the author is not aware of the line number to branch to. Which is a very clumsy way of doing things and in fact can be positively dangerous because inevitably the author forgets to go back and fill the line number in. In order to write structured programs the Basic programmer must be able to address lines by way of labels rather than line numbers. There have been a number of programs which have set out to do this. We already stock three – SBT, SBASIC and Labeller. The latter restricts itself simply to the function of adding labels, the two others are fuller programs, but perhaps somewhat elementary. The Basic Answer sets out and succeeds in being the definitive answer to this vexed subject. Most important of all, it comes with a very explicit manual numbering some 75 pages.

The procedure for using TBA is that the program is constructed or written without line numbers. It is then run through a processor which converts that source code into normal Basic code. In other words, although one writes with the ease of TBA one finishes up with a normal Basic program containing line numbers.

Although we have emphasized the use of labels in TBA and thereby the extreme ease of writing a structured, organised and sensible Basic program, this is not the only advantage that accrues from using TBA. The next most important feature to our mind is the fact that one can use 14 **significant** character variable names. At first sight this may not sound too important, but when you add to it the fact that the variable name can contain both a hyphen or a fullstop, then this feature becomes very important. For either of these, punctuation marks can be used to separate two words; thus in a mailing list one can entitle a variable as SUR-NAME$; in an accounting program such variables as TOTAL.DUE has a great deal more meaning than the more common TD. When the feature of meaningful labels and essentially English language variables are added together one comes up with a program that is almost entirely pure English. The advantages of this to program maintenance, particularly future program maintenance, is quite amazing. The Basic interpreter in your machine, of course, can only accept two character variables. The 14 character variables are converted by the processor into two characters. Although one is, therefore, getting the advantage of the line variable name, TBA does not give the user any additional number of variables to use. We have never run out of variables using the Tandy interpreter, so this is purely an academic point.

So far we have pointed out the advantages of using labels in a Basic program and line character names and without doubt these are the two prime advantages of using TBA, bearing in mind that when they are used together they result in a highly logical and very understandable program. There are many other advantages however. In particular conditional processing, global and/or local variables plus full cross referencing during processor run. Conditional processing means that processing of the source code is made conditional upon a particular parameter being true or false. If a condition is false then a certain section of the code will be ignored, if it is true then it will be processed. During processing a prompt will appear on the screen, the conditional may be entered at that time or alternatively it may be included in the source code prior to the conditional block of code.

Global or local variables are fairly self explanatory. A global variable is one that is effective throughout the program, a local variable, however, is a new concept and is extremely powerful in TBA. Essentially what it means is that you can use a variable only in a subroutine. Its value or purpose is only relative to that procedure and upon leaving the subroutine the value or purpose is no longer of use. Although this feature is of particular importance again in making the program more readable, it does have additional advantages in that a local variable name can also be used as a global variable name and thus the number of variables is to some extent increased. Such a course is not particularly recommended though because it would probably depreciate the readability of the code rather than increase it. The point to remember is that local variables cannot be used to pass information to and from the main body of a program.

Before we describe the cross referencing feature mentioned above, we should lead you through the procedure of using TBA to process source files. The source file is what the user writes and contains all of the advantages mentioned above, the ability to use labels, no line numbers, and so on and so forth. When this code (source) has been composed it is processed by TBA. This is called as a normal CMD file and its first prompt is to ask the user to enter filespec of the source code program. When this has been done the user is asked to enter a name for the object file which will be the executable Basic program. After that the user is required to enter any switches or parameters that he requires during processing. There are a number of these by which the generation of the object code and its handling and listing, either on the VDU or the printer, can be controlled. For instance, a listing of the processed code and cross reference may be displayed on the screen. The cross reference is a reference between the label and its ultimate Basic line number. In addition the line numbers in which that label is actually referenced are stated. In addition to this switch, however, switches enable the user to send a listing of the processed code and cross reference to the line printer, or to send no source code but only the object lines to either the printer or the display. Further alternatives allow the user to direct that no cross reference be done or that only the cross reference be shown. Finally the user may define whether he requires full compression of the object code and whether or not he requires conversion of variable labels and directions to upper case.

It will be seen, therefore, that not only is TBA a structured language processor it is also one which allows the user the most easy and convenient method of use. TBA is available for LDOS systems only, as it uses some of the advanced features of LDOS in its compilation process.

TRAKCESS – ACCESS DISKS BY TRACK

Model 1 version listed but Model III version exists (discontinued in favour of Hyper Zap)

At first glance this may appear to be a zap program, perhaps similar to Prozap or Super Utility Plus; it is not. The program name is extremely descriptive, it is a utility for accessing a disk by bringing to the user every practical capability of the machine's floppy disk controller chip. By addressing the disk at this low level Trakcess is able to combine these capabilities into powerful, intelligent functions, the limitations of which are essentially the machine itself and the floppy disk controller in particular. Trakcess is powerful precisely because it works at the most elementary levels. If you are not already familiar with the controller chip, as a mimimum you will require the Data Sheet for it. Accordingly, a copy of that document is enclosed with the documentation. Trakcess has been padded around with a lot of other active software, but essentially it is a utility for using the controller at the controller level and certainly should not be the tool of choice for straightforward zapping. Trakcess assumes very little about the disks upon which it is used. There are often many questions for the operator to answer and although the documentation is explicit, and as we have said the chip Data Sheet is included, to make full use of Trakcess the user must be prepared to study the literature and experiment with the possibilities. The purchaser of Trakcess may also wish to give serious consideration to the purchase of the new "Mysteries" book, described elsewhere in this listing. This is devoted to disk input/output, and to be truthful was the incentive for us to stock this program.

That, therefore, is the purpose of the program, to get into your disk at the lowest level possible. Using it requires a 48K machine and two of the commands require two drives. Interestingly enough Trakcess is written in Basic. It is quite a fascinating program to analyse, but is very tightly written. There are sixteen commands available in Trakcess and they are as follows:

SELECT DRIVE	GO TO HEAD POSITION	STEP HEAD IN
STEP HEAD OUT	READ A SECTOR	WRITE A SECTOR
TAKE TRACK FROM DISK	PUT TRACK ON DISK	SCAN TRACK SECTORS
LOCATE DISK SECTORS	COPY TRACK	DUPLICATE DISK
BUILD FORMAT TRACK	EDIT MEMORY	FIGURE CRC VALUES
HEX DUMP TO PRINTER		

The above list of commands should give a better description of the functions of the program than an itemised description. As will be seen after selection of the drive, the head may be stepped in or stepped out; a sector may be read and an entire track taken from the

disk. The command whereby CRC values may be calculated is rather a nice one. Almost all parity errors and such like catastrophies come about because the CRC (Cyclic Redundancy Check – long winded but essentially just means checksum) has been mis-calculated or incorrectly written to the Data Control section of the track. It is very handy to make CRC calculations, even more so with Trakcess because it will accept the bytes from RAM or from the keyboard.
Trakcess is not a new program. Although there have been important modifications to it, it has been around for a year or so. As we said above, however, its principal application is at the most elementary levels of disk input and output and it seemed to us that its value as a tool was debatable until a book such as "Machine Language Disk I/O Mysteries" (described elsewhere in this list) was published.

STOPPER – THE BASIC BREAKPOINTER

This program is written by Roxton Baker who is the author of Trakcess, described above. It is a complete Breakpoint utility for Basic programs and when we say "complete" we mean just that. Nigel Dibben's Impakt contains breakpoint facilities for Basic programs; Stopper takes that one section of Impakt and amplifies or magnifies it until the utility contains pretty well everything that can be asked of a Basic de-bugging tool. By far the best way of describing Stopper is to list its commands which are as follows:

1. Set a breakpoint at a specific line to be taken the first time that line is reached. The program will halt **before** any of the line is executed.
2. Set a breakpoint at a specific line number. The break to be taken when that line has been hit a specific number of times.
3. Set a breakpoint keeping the previous hit count.
4. Set a breakpoint at the same line as previously used but change the hit count.
5. Set a breakpoint to be taken when the specified variable becomes equal to a specified value.
6. Set a breakpoint to be taken when the specified variable becomes unequal to the specified value.
7. Restore a previous breakpoint exactly whether a line number or a variable value breakpoint.
8. Restore previous line breakpoint but with a hit count of one.
9. Restore a previously defined variable breakpoint.
10. Restore a previously defined line number breakpoint.

The following are maintenance commands:

Show status of current breakpoint.	Fix any active breakpoint.
Show current value of a variable.	Delay one second then continue.
Delay until keyboard input.	Execute next statement.
Execute to the beginning of the next line.	Display the current line from the current statement to the end.
Switch on trace (line number is displayed in lower right corner).	Trace to printer in one column.
Trace a variable value to the screen.	As above in eight columns.
Turn off trace.	Trace a variable value to printer.
Turn Stopper on.	Set tolerance on single and double precision value comparisons.
Turn Stopper off.	

In addition to all of the above commands various keys are active during the time that Stopper is being used. They are in the main convenience items. Stopper is extremely easy to use, for instance simply typing (200 whilst Stopper is active will mean that next time you RUN or CONTinue, the program execution will stop at the beginning of line 200. One very useful feature of Stopper is the command which displays the current line from the current statement to the line end. These days most authors use multi statement lines with gay abandon and often they cause errors. But frequently one does not know whereabouts in the line the error is. In that this command displays the rest of the line it will in fact display the statement that caused the halt, followed by the rest of the line. Stopper is, of course, written in machine code and it takes up just over 3K of high memory RAM.

POWERDRAW – ANOTHER FANTASTIC PROGRAM FROM KIM WATT

From time to time there have been a large number of graphic assistance programs written for the TRS-80 and Genie. Paradoxically, although this is the most sophisticated of them all, it is also not one of them! This statement will need some explanation. The early drawing programs allowed the user to draw pictures on the screen by tracing a block or pixel around the screen. After that came the type of utility that not only enabled the user to draw the picture, but also to resolve the picture into the form of data statements which could be added to a program. Ken Smith's Draw and Graphics Resolver (which he wrote some two or three years ago) is a prime example. Although Powerdraw continues this evolution to some extent, it has really taken such a giant step forward that it should not be described as either a drawing program or a graphics resolver. It is really a bit of everything. It is as much use to a Basic programmer as it is to an Assembler programmer; it is as much use to a game programmer as to a business programmer. You can very easily draw little men with it, you can if you wish draw rocket ships with it, you can very easily animate them to make them take off. Alternatively, the programmer writing a suite of accountancy programs frequently has to construct an attractive display. Both and many other functions can be carried out by Powerdraw with the utmost ease. It is really the latter point that is the key of the program; it is fantastically easy to use. Just now we mentioned that Powerdraw is of as much use to a Basic programmer as it is to an Assembler programmer. The reason we said this is because, once you have constructed the screen, it may be saved in any one of six different ways as follows:

1. In basic data format. The information is constructed in the form of data statements and may be merged into an ordinary basic program for use by that program.
2. The second way in which the information can be retained for future use is in EDAS format. That is to say, a file which is compatible with the EDAS Editor Assembler, which is described elsewhere in this catalogue.
3. EDTASM format. This is the Editor Assembler supplied with NEWDOS.
4. The information may be saved in the form of a packed graphic string for use in a Basic program.
5. The data may be saved as an executable standard DOS load file. In other words, as a /CMD file. The program will originate at the start of Video Memory 3COOH and a normal exit is taken from it back to DOS READY.
6. Finally the data may be saved in compressed format. This is the format recognised by Powerdraw and its function, of course, is to save the data for future loading into Powerdraw.

In the ensuing descriptions we will be mentioning "buffers" a great deal. These are sections of Memory into which from 1 - 34 different screen images may be stored, 34 separate pictures, therefore. This, incidentally, is where the animation feature comes in, for the buffers can be played back on the screen and if each one is slightly different to the preceeding one, the appearance of a moving picture will resolve. We would like to make it clear, however, that although this feature is an important one in Powerdraw, customers would not be well advised to buy Powerdraw simply for this feature. Our program Animation is entirely devoted to that subject. As we have tried to indicate, Powerdraw touches upon pretty well every application of screen layout and graphics. Animation is a specialised program devoted to just one section of Powerdraw.
By far the best way of describing the really extensive power of this program is to describe its separate features, this we will now do. They are not necessarily in any particular order. Each of the features is a command and most of them can be entered with a single key stroke. We will not be mentioning the normal graphic manipulation command keys, such as arrows to move the cursor and shift arrow to move the cursor more rapidly.

SET ANGLES

Powerdraw can draw lines at angles stipulated by the user. This is the command by which such angles are set up. The arrow keys are not used to move the cursor when drawing angles. The I O K and L keys are used, thus hitting the L key will draw a line downwards at the angle stipulated with this command.

BUFFERS

In addition to the 34 holding buffers previously mentioned, there are other buffer areas used by Powerdraw. The most important two are the Input/Output buffer used when loading or saving files to disk or to tape and a work space buffer which is, of course, a replica of the current screen contents. There are six sub-commands applicable to these buffers as follows:

CLEAR This will clear all of the holding buffers. If for instance you have constructed three or four screens and the contents of

each one is held in an individual holding buffer, this command will clear all of those buffers, the program is, therefore, starting effectively with a clean slate.

EXCHANGE This sub-command will exchange the data from the work space buffer (in other words the screen upon which you are working) with any one of the holding buffers. This is a particularly useful sub-command and it means that it is very easy to compare one's present work space with a screen previously stored.

RECALL This sub-command moves the contents of another of the holding buffers into the work space buffer.

STORE The opposite of RECALL. The work space buffer is stored into a holding buffer.

ZERO Clears out any single holding buffer.

MERGE This is a fascinating one. It will take all of the contents of any specified holding buffer which is not a blank space and merge or move them into the work space buffer. In other words, the resulting screen is a combination of the current work and earlier work.

CLEAR BUFFER

Clears the contents of the work space buffer. An example of the thoughtfulness of the author is that this command has to be entered twice in order for it to be effective. Remember that these commands are made by use of only one key stroke.

DRAW MODE

This is the entry into the graphics or draw mode and enables the user to construct whatever screen he wishes. There are three sub-modes whilst in the main graphics mode namely, DRAW, SKIP and ERASE. The first and last are self explanatory. SKIP is the command by which the cursor is moved so that it does not affect the present screen contents.

FLASH SPEED

The cursor in Powerdraw flashes. Some people are very fussy at which speed this takes place and this command allows you to set the speed.

GET FILE

This command is self explanatory. It enables Powerdraw to fetch or get previously constructed files and load them into the holding buffers. Access is to and from either tape or disk (bear in mind however that Powerdraw is a disk program). As previously mentioned, data is stored in a compressed format.

HOME CURSOR

This moves the cursor to the top left hand corner of the screen.

MENU

Powerdraw is a Menu driven program and this command will display it.

FLIP SIDES

One of the features of Powerdraw is the ability to work on double width screens. This command is used to change from one side to the other.

PUT FILE

This is the opposite of the GET FILE command and, as previously described, the data may be stored in any way of six different formats. As with GET the data may be stored on either tape or disk.

QUIT

A normal exit command takes the machine back to DOS READY. Again Kim Watt has provided a guard against accidental exit. The key stroke for QUIT is Q, but this has to be pressed twice and the Clear key held down before an exit is taken.

REVERSE

This command reverses the screen. Everything that is lit is turned off, everything that is dark is turned on; very useful.

TEXT ENTRY

So far we have been concentrating on describing the graphics mode of Powerdraw. In fact text and graphics may be mixed freely on any screen. This is the command which is used to tell the program that the user is about to enter text rather than a command.

CURSOR POSITION

This is a toggle command. When on, the current location of the cursor will be displayed at all times in the upper righthand corner of the screen; when off, of course, this information is suppressed.

VIDEO WIDTH

As we briefly mentioned Powerdraw supports a double width screen. This command toggles between the two. The FLIP SIDES command enables one to display the hidden section of the screen when in the 32 character mode.

WATCH BUFFERS

The contents of the holding buffers may be reviewed at any time with this command. The work space buffer is not displayed.

MIRROR IMAGE – TOP/BOTTOM

Another fascinating and unique command. It performs a mirror image reversal of the buffer on a character basis. This is almost impossible to describe on paper. Assuming a square at the top of the screen, the mirror image command will move the square so that it appears in the bottom half. But the southerly part of the square will become the northerly part. As the change is on a character basis, some parts of the image may well be split. In other words, the mirror image re-construction is by character size rather than pixel size.

MIRROR IMAGE – RIGHT/LEFT

This is similar to the above, except that the mirror image is constructed in a lateral direction. It also, as a matter of fact, is more easily understandable, because of the character basis of the construction.

MOVE

This option allows the user to move the contents of the work space buffer in any direction by increments of one character space. Obviously this is a very important function when constructing moving graphics. One can draw a picture, store it in a holding buffer, move the picture one move to the right, store it in the next buffer and so on and so forth.

SPECIAL KEY

Use of both the Clear and @ keys at the same time activates a sub-command section of the program, which is effectively a short cut to some of the functions already described. What it enables the user to do is to define very easily a section of the screen. Once done, that section may be operated on as a whole and four sub-commands are prompted. The first will light all the blocks in the area. In other words the stipulated area, however large or small it may be, will all be lit. The second reverses this process, any blocks previously lit will be turned off and vice versa. ASCII characters in the area are not affected. The third option will duplicate throughout the area a particular character and the fourth option enables the area to be cleared. As will have been realised by the mention of characters, this section of the program can only be activated when in the text mode. It is principally used for either operating on an entire block at once, in other words a short cut, or for making some rather interesting effects.

The above concludes the description of the commands available to Powerdraw.

The author has done everything he can to make the program compatible with as much as possible, both in the sense of disk operating systems and printers. So far as the former is concerned, as far as we know, Powerdraw is compatible with all major DOS's and three screen printer drivers have been provided in the program to assist the user in obtaining hard copies of the displays. The first is for printing via an internal parallel driver, the second via a call to 3B in ROM and the third driver is dedicated to the Epson MX80, with or without GRAFTRAX. The user must be aware, however, that hard copy is only of use if the printer in operation is capable of drawing graphics. As will be known, the Genie method of addressing both the printer and the cassette is somewhat different to the TRS-80 and we cannot guarantee compatibility in either of these two areas on the Genie machines.

Several additional files are supplied on the Powerdraw disk as follows:

PLAY/CMD This utility will display the contents of any compressed format disk file which you have created. It will be recalled that this format is used for saving programs for future input to Powerdraw, thus this utility enables the screen contents to be displayed without actually reading by the main program. Several files may be accessed.

PLAY/BAS This is a Basic program but will only display a single file.

DEMO A demonstration file.

PMERGE/CMD This utility will merge several compressed format files together. It is useful in that it can merge files, the total space of which is greater than the computer memory. The buffers may be overlapping, and thus one can construct a movie.

As a point of further clarification, Powerdraw is a disk orientated program, but it is capable of storing its data on either tape or disk. We are not quite sure what the application of the tape feature would be, perhaps Powersoft intend to link such files to programs in the future.

MODEM/80 – A SUPERIOR COMMUNICATIONS PACKAGE

More and more people in the TRS-80/Genie world wish to communicate with each other or with main frames. For sometime we have stocked a program called Smart Terminal and we will continue to do so. It is a versatile piece of software but it has one or two quite serious drawbacks. The first is that it is not compatible with the Genie machine. As owners of that hardware will know its RS-232 interface is not standard (in Tandy terms) and it will not work with any program that has been written for the TRS-80, as the Smart Terminal was. Modem/80 has been modified to work with the Genie either under TRSDOS or LDOS. They are, however, different programs so customers must state the version required on their order. Another major advantage of Modem/80 over Smart Terminal is that the former can have files open to transmit and receive at the same time. This is particularly useful when an operator is sending a list of commands to a remote computer and also wishing to download the responses. There are three other major advantages, firstly that files of any length can be sent or received if the remote system uses a stop/start protocol to pause during disk access; secondly the file transfer protocol of Modem/80 matches a common public domain CP/M program for transfers between different types of computers, and finally, the Modem/80 includes a HOST program and several utilities for processing files. As we have said Smart Terminal will be retained in stock because it has one advantage over Modem/80 and that is that it is compatible with tape systems whereas Modem/80 is strictly disk orientated.

TRS-80 Model I or III/Genies may be remotely operated from a terminal or second TRS-80/Genie through a telephone link or by direct connection. Files may be transferred with the computer un-attended. Files may be transferred to another computer that can use the protocol of the CP/M program ''Modem'' which is widely used on computer bulletin boards and available on the CP/M User Group disk number 25. When we say ''files'' we of course include programs; indeed, we use Modem/80 quite frequently here at Molimerx for transferring programs from the Model III to the Model I TRS-80. With the program acting as a terminal, Modem/80 comes set up for use with MicroNET, the Source, Forum 80's and similar systems. The communications parameters, character set and control characters may be re-defined to operate with many other computers.

One of the important advantages of Modem/80 is that it can handle files of unlimited length. It comes with a utility which enables this to be done. Files may be prepared off line on a word processor or an included utility may be used if a word processor is not available. This has the big advantage of actually preparing a file which will remain resident on the disk rather than simply typing out to the other computer in the hope that there will be no problem and losing the data if there is. Transmit and Receive files may be opened before communications begin and may be turned on and off independently. As we have mentioned, one file may be transmitted whilst a different file is simultaneously being received.

Another big feature of Modem/80 is that a single line may be sent from a file. In this way typing from the keyboard may be intermixed with the contents of the file. This has several advantages; in addition to mixing keyboard input with file contents, for instance, it may be transmitted to a computer that cannot accept full-speed transmission and does not use control codes to stop and start the file transmission.

DOS commands and programs which execute in the lower 16K of memory may be issued whilst maintaining positions in the Transmit and Receive files. The previous screen contents are restored when the DOS command is completed.

In addition to the above features, Modem/80 contains a program which allows a computer to act as a Host to another computer. In other words, computer A may have complete remote control over computer B.

As we go to press, Modem/80 comes with six utilities additional to the main Modem/80 program as follows:

HOST1/CMD Allows remote control of the computer.

XMODEM/CMD file transfer utility that may be used alone or run under HOST1.

SAVE/CMD Key to disk for off line text file preparation or run under HOST1 to receive a text file from a remote computer. This program (only) is limited to the available memory of the computer.

TYPE/CMD Lists a text file to video or printer – when run under HOST1, it will also send to the remote, and will send the (save to file ON) and (OFF) codes to control MODEM/80 at the other end.

TEXTFIX/CMD Clean up text files so they will load into a word processor. Removes control characters, extra linefeeds, deletes characters where a backspace or rubout was received. Can add a terminating 00 byte to a file as required by Visicalc and Electric Pencil.

HEX/CMD Converts binary files to ASCII hex characters and the reverse for transmission to computers that cannot handle the full character set. Check sums a file to verify accuracy of transmission.

Needless to say with a piece of software as advanced as Modem/80 all of the normal parameters can be changed, including baud rate; duplex setting; word length; parity and stop bits. Also optional echoing to the screen is possible, line feeds may be added and screen scrolling set. Modem/80 even contains a switch to allow graphic characters to be received. This is rather unusual but Forum 80, apparently, have a graphics experimental mode which may be accessed with this feature.

The program is Menu driven. Indeed it has three separate menus. One is a ''local'' one, for which the local parameters as to baud rate and so on are changed, the second is a disk menu which permits the user to write the current buffer to a file on disk, save a file whilst in terminal mode and so on.

Finally the main Modem/80 menu, in addition to permitting access to the other two menus allows the user to switch to terminal mode, echo, accept a DOS command and end program, plus of course the two most important, namely to receive a file and send a file.

As can be seen from the above, Modem/80 is a versatile and full communications package for disk orientated machines. We would, however, like to make one point which really applies to all communications packages. We get a great number of telephone calls with these sorts of programs from customers who wish to communicate with another computer and want us to tell them whether or not the package will allow such communication. So far as we know, Modem/80 will communicate with all other computers, but we cannot give an undertaking that this will be so, unless we had the second computer here to try it out, which obviously is impossible. We also get a number of calls from customers who have bought a communications package, but who are not prepared to read through all of the documentation to acquaint themselves with it. As with all our software, we are more than happy to give assistance to customers as much as possible but customers should be aware that the multiplicity of tasks which a good communications package can carry out brings with it the ''quid pro quo'' that the user has to spend some time in understanding the program.

T.P.I.

We are not sure whether we have mentioned this in the catalogue previously but the question of the number of Tracks Per Inch on a disk is becoming quite troublesome. This is due to the fact that the standard format was changed some months ago. Previously 80 track disks were 100 TPI, they then switched to 96 tracks to the inch; obviously the two are not compatible. Luckily this only applies to the Model I Tandy machine, the Model III has always been 96. Customers owning Model I machines with 80 track disk drives **must** specify when they order whether they have 100 or 96 TPI drives. This question only arises for TEAC drives supplied by Cumana or their dealers. Tandy does not supply 80 track drives for the Model I. A further charge will be made to those customers who do not specify the correct TPI and thereafter have to have their disks re-recorded by us. If any customer is uncertain as to how many tracks to the inch his drive supports, he need only notify us of the TEAC model number.

LDOS FIXES – NOW ON THEIR OWN

In early versions of LDOS patch or fix files for Scripsit, Visicalc and the Electric Pencil were supplied. We found that these required updating so frequently that it was becoming a problem, and for that matter expensive, both to the customer and ourselves. Accordingly the fixes have now been taken off the disk operating system disks and put on a disk by themselves. The opportunity has been taken to add a number of other fix programs. At the time of going to press the actual number is not finally known, but certainly patches have been added to make all of the Tandy Microsoft software compatible for both Model I and III. As a matter of fact most of the Microsoft programs already operate cleanly on the Model I under LDOS but as Microsoft has never formally acknowledged the existence of the Tandy Model III machine, life has been made a little difficult trying to get their programs to run on it! The patches, therefore, enable the use of the Microsoft software to run on the Model III under LDOS. The cost of this Patch disk has been kept very low as is shown in the Index.

C – ELSIE FOR SHORT

It is difficult to understand where people think up these computer names, but for better or worse we are stuck with a language entitled C. The compiler which runs under LDOS is, therefore, called LC which inevitably has become ELSIE. C is a high level language. It has been getting a lot of attention lately because a rather currently fashionable disk operating system, UNIX, is written in this language. It is always difficult to define or describe new languages. One can say that COBOL is of a particular use in a certain area, Pascal has quite another use and Basic is a good general purpose language, but such comments do not really give too much insight into the structure of the language. However, one has to say something, so, if we have to describe C in these terms, it is a program for applications software authors and particularly those writing utilities. Indeed, the fact that the UNIX disk operating system has been written in C is an indication of its importance to utility system authors. As UNIX is not compatible, at any rate at the present time, with the Genie machines, nor the Model I and III Tandy machines, so far as we know the LC compiler is the first application of C to these machines. The definitive treatise on C is "The C Programming Language" by Kerninghan and Ritchie. LC provides a substantial sub-set of the C programming language defined in that book. In that C has its roots in university research laboratories, a substantial proportion of the software available to run under it is in the public domain. A large amount of this software and, indeed, commercial software written for C is compatible with LC. On the other hand, LC programs using the standard library (supplied with the compiler) can be compiled and run under UNIX. In other words, portability between UNIX, C and LC is close to 100%.

C is a structured, portable language. A C program is a collection of functions arranged hierarchically. C functions can be recursive and re-entrant, as local variables are created and stored in a stack. All machine-dependent features needed, such as I/O, are not implemented in the language; rather, they are placed in the standard library. Thus, only the implementation of the standard library changes from installation to installation, and C programs are written in machine independent ways. The language itself provides ways of expressing program structure, and of giving arithmetic and logical expressions. C is known for having one of the most powerful expression capabilities available in any language. C statements supply the WHILE, DO-WHILE, FOR, IF, and SWITCH-CASE constructs. C also provides powerful pointer capabilities to enable direct access to memory and variable storage. LC is an integer-only implementation of C which provides all C statements except "struct", "union", "goto", "switch-case", and "typedef". All data types except "float" and "double" are implemented; "long" and "short" declarations are accepted, sixteen bit fields are used for all integers. In LC, "char" variables are implicitly unsigned. Single-precision and double-precision floating point operations are supported via functions supplied in the FP/LIB library included with the LC compiler. LC accepts multiple input files, with four levels of nesting for " include'd" files.

The compiler generates an EDAS version IV assembler source file which is then assembled with the standard library and any other libraries needed to resolve function references in order to generate the executable program. The value in generating assembler source is two fold. First, you can obtain a complete machine code source listing which could prove invaluable in debugging complex code. Second, local optimization of assembler source code can be performed as required by the experienced assembler programmer. The LC standard library provides such functions as standard I/O redirection, dynamic memory allocation, automatic standard I/O opening and closing, and program chaining. In addition, functions specific to LDOS and the Model I/III are supplied in an installation library to provide access to such functions as graphics and system entry points.

LC supports separate compilation; programs may be compiled in segments, and frequently used functions can be pre-compiled. You can create your own library of commonly used functions with the Partitioned Data Set utility (PDS is not included with LC but is available as a separate package as listed in the catalogue). The assembler source code output by LC is designed to use the extensive SEARCH and conditional assembly support in EDAS Version IV. The assembler and companion assembler cross-reference utility are supplied with the LC package. You need nothing more to start writing and running C-language programs except your LDOS-equipped computer and a copy of "The C Programming Language". A 48K RAM two drive Model I or Model III is required.

Some highlights of the "ELSIE" compiler are:

Integer subset of the C language.
Access to floating point routines in ROM via function calls.
All statements supported except STRUCT, UNION, TYPEDEF, SWITCH-CASE, GOTO.
All operators supported except "-)", ".", SIZEOF, and (TYPENAME).
UNIX compatible standard I/O library.
Standard I/O redirection with complete device independence.
Input using FGETS or GETS functions support LDOS Job Control Language.
Dynamic memory management (ALLOC, FREE, SBRK).
Sequential files open for READ, WRITE, and APPEND.
Generates Z-80 EDAS Version IV source code as output.
User libraries in Z-80 source ISAM accessed PDS files.
Compact one line invocation of the compiler.
LC's interactive friendly interface provides easy way to learn LC options.
Supports separate compilation of functions.
Compiled programs run under both Model I and III without modification.
Installation library gives access to graphics and LDOS entry points.
Supplied with example programs and utilities in source form.
LC/LIB includes: FPRINTF, PRINTF, ALLOC, FREE, SBRK, and String functions.
The LC package is Model I/III LDOS compatible and includes LC/CMD, LC/LIB, FP/LIB, IN/LIP, EDAS-IV, XREF, and more than 200 pages of documentation.

MAXI MANAGER AND DATA WRITER

The big problem of the microcomputing world is the natural evolution of products both with hardware and software, but perhaps more importantly, or at least more frequently, with the latter. For some six months or so we were selling Maxi Manager, which at that date was the state of the art database. There is little secret that to a number of customers it gave a lot of problems and it was, therefore, with something of a sigh of relief that we were able to negotiate the distribution rights for Data Writer, which was introduced in our last list. The problem is that this leaves people who have large Maxi Manager files in some difficulty if they have purchased Data Writer. Luckily one of our authors, I. W. Strang has written a conversion program. This takes a Maxi Manager file and re-writes it in Data Writer format. The only thing that it is necessary for the user to do is to write a normal Control file under Data Writer. This is the same procedure as is normally carried out when setting up a new file under that program. This software is available from us without charge. Customers will however, have to send in either their original disks or evidence of purchase of both Maxi Manager and Data Writer.

MACHINE-LANGUAGE DISK I/O & OTHER MYSTERIES, TO HARNESS THE POWER OF DISK DRIVES.

The best and most complete book on TRS-80 Model I and Model III disk I/O available.

"Machine-Language Disk I/O & other mysteries" by Michael Wagner. Volume 5 of the popular ". . . and other mysteries" series published by IJG.

More than 190 pages of information and discoveries on the subject of disk I/O for the beginner and expert alike, using Z-80 Assembly Language to directly control the TRS-80 Model I and Model III disk drives and interrupt systems. With this book anyone can become a disk I/O "expert", and make more efficient use of disk space, or to write his or her own "full blown" disk operating system!

For the beginner and old pro'.

Machine-Language Disk I/O & Other Mysteries is packed with source code and flow chart illustrations for every function and operation described. And the source code for two complete disk I/O driver routines, one for the Model I and one for the Model III, are also included for "instant" access to your floppy drive systems.

Plus, the source code for a small disk operation system (S/OS) is included as a bonus. This S/OS contains all of the routines described in the book and shows how all of the disk I/O and interrupt functions should be incorporated into a working system.

On machine language disk I/O.

Machine-Language Disk I/O & Other Mysteries explains what the floppy drive system is all about, what Tracks and Sector are, the Western Digital Floppy Disk Controller 1771 and 1793 chips, read/write access, reading a selected drives' status, how to test and make sure a disk is in a drive or if a drive is on the system (on-line), the Head Restore command, the Head Step and Seek commands, the "Force-Interrupt of function" command, the Read Address command, the Read Track command, the Write Track (FORMAT) command, the Read Sector command, the Write Sector command, Post Non-Maskable-Interrupt Processing for the model III, and much more.

On TRSDOS file I/O

and most TRSDOS-like operating systems, Machine-Language Disk I/O & Other Mysteries explains; what a disk file really is, what records are and how they're stored on the disk, creating a file, performing Direct Record I/O, performing Single Byte I/O, closing & killing files; error processing and TRSDOS error codes with their meanings, and much more.

Plus many other handy programs, routines, and revelations are included. Such as a TRSDOS error message displayer, a disk formatter program, a program to calculate a password for a given encode, a object file load-format displayer, a file oriented full screen file editor, and a FULL BLOWN smart terminal program.

MACHINE LANGUAGE DISK I/O & OTHER MYSTERIES

The above is, of course, a replica of the publishers' advertisement which will be appearing shortly in the American magazines. I think it is fair to say that IJG learned their lesson after their last Mystery book "The Custom TRS-80". It, you will recall, was some four months in coming, after its announcement! We are pleased to say that we have this fifth Mystery book in stock as we go to press with this list, which is rather handy for those of you wishing to buy a Christmas present!

We thought we should add one or two comments to the above, more in amplification rather than correcting any errors. The book is very good. It contains everything that is stated in the advertisement and it is certainly the best and most complete book on disk I/O, at the machine level. Mind you, this is not saying an awful lot, because the only other book that we know of is a very small one written by William Barden about three years ago. In fact it was more of a pamphlet than a book. Another comment is the headline above, where is mentioned that the book is for the beginner and the experienced user. We would have some reservations on the former. First of all, it should be emphasized that the book is written explaining disk I/O at the machine level, hence the reader must have at least a nodding acquaintance with Assembler language – not necessarily programming, this is mostly done for you in the book, but the reader must understand the Z80 mnemonics as an absolute minimum.

One final comment, this book is not for the average user. It must be differentiated from Harv Pennington's book "disk and Other Mysteries". The latter was written with the user in mind; this one is more for the programmer or user with very specific interests.

In summary, therefore, without a doubt this book is the best in its field; the field, however, may be somewhat restricted. If you are considering writing your own BOOT, or even your own disk operating system however, this book is certainly a must.

INSIDE SUPER UTILITY PLUS

As its title infers, this book is intended to explain the intricacies of the Powersoft program, Super Utility Plus, which is described elsewhere in this catalogue. To a large extent, therefore, it is an amplification of the Super Utility Plus manual, but it does go a lot further than that. It is not dissimilar to Pennington's "Disk and Other Mysteries". As a matter of fact, in a lot of ways, we rather prefer it. The book starts off with a technical introduction, which is some 11 pages, with illustrations (although perhaps not very clear ones) explaining the makeup of a disk. The author has a knack of hiding away in the text little items of information with which one was not previously familiar. One frequently, when reading the book, says to oneself "gosh, I didn't know that", which, when you come to think of it, is a good critique for a publication such as this. For instance, there is an easily understood table of the Data Address Marks used by the various disk operating systems. It is something that one either knew or could easily obtain from other publications, but it is handy to have it all in one spot. Also, although the illustrations are rather crude, they are very descriptive. The ID header, for instance, is illustrated whereas most books or descriptions merely give a list of the bytes, which are sometimes difficult to assimilate. The second chapter explains in detail the way in which Super Utility Plus should be configured. An interesting statistic is that this chapter is 17 pages long, of slightly shorter than A4 size paper. Super Utility Plus owners will know that the actual manual that comes with the program only has seven pages of A5 size description on the same subject. The one thing that is quite certain about this book, is that people who use the program or have read the manual that comes with it, are in for quite a surprise in the sense of learning new things about Super Utility Plus and of new ways of using it. The third and fourth chapters are pure gold for those of us who have tried vainly to repair a disk in the past. It even tells you how to re-construct a track, which is pretty heady stuff. You are also led by the hand through the procedures to identify mystery disks. That is to say, disks which have been formatted by unknown disk operating systems. The fifth chapter is quite fascinating as its title, which is "undocumented Features", indicates. Apparently there were a number of features which Kim Watt elected not to divulge in the Super Utility Plus manual. One slight criticism of this chapter is that it describes how a joystick can be used with Super Utility Plus. The mind revolts at the idea of an operator sitting in front of his computer with a joystick trying to repair the only copy of an important data disk. Chapter six is entitled "Miscellaneous" and it is just that. It contains a multitude of snippets of information. The seventh chapter is mainly concerned with the zapping section of Super Utility Plus, although

quite a lot of material is contained about patching Super Utility Plus itself. Kim Watt has added three or four pages as an Afterword sub-titled "On Becoming an Expert". Dennis Brent, the president of Powersoft, has also added a few words and the remainder of the book is made up of appendices. These will be of most interest to the serious students, because they contain the Symbol Table for the 2.2Z version of Super Utility Plus, both for the Model I and Model III.
This is an excellent book and we recommend it. The only real criticism we have of it is that it could have gone on a lot longer. The size of paper is close to what we in England call quarto, which is about the same width as A4, but shorter, and the book contains 88 numbered pages and probably a couple of dozen un-numbered pages in the appendices.

MINI UTILITY 3 – SCREEN PRINT FOR TAPE USERS

Sorry for the delay in getting this one out, it seems to be an axiom of this business that the small jobs never get done. All disk operating systems come with a screen print facility. Nowadays, the Genie I and Genie II also have that facility as does the Tandy Model III. However, the Tandy Model I and the original Video Genie when used with tape do not, hence, the requirement for such a small utility. Mini Utility 3 does not occupy any memory, it stores itself away in an area of RAM that is only used when disks are connected. It is accessed with a non-printable key. The procedure, therefore, is to load it (as it is so short it only takes a few seconds) under the SYSTEM command. It is then resident in memory and can be forgotten, but every time the Shift Break key is pressed the contents of the screen are sent to the line printer. The screen print facility is extremely useful. In fact after one gets one, one always wonders what one did without it. They should preferably be accessed, as this one is, with a non-printable character so that the screen is not spoilt.

SUPER UTILITY PLUS TECHNICAL MANUAL

This is very much what the title implies, a technical manual. It should not be purchased by customers unless they are proficient in assembly code and wish to interface with the Super Utility Plus program.
For people who do wish to do this, however, the book is a veritable gold mine. There is a fairly short introduction by Pete Carr going over some five pages, which covers a general discussion on the layout of a TRS-80 disk and mentions some idiosyncrasies of various disk operating systems. After this introduction the system addresses and labels for the SU + program are listed. We have not counted these exactly, but an indication of the complexity of SU + is given by the fact that there are around about five hundred labels to the program. After these are listed the book goes through them giving a short explanation of their purpose. Sometimes this explanation is just a single line and sometimes half a dozen, but sometimes more. Finally, on pages 74 to 76, there are half a dozen sample subroutines which would interface with SU + . It should be made clear that the book is not a tutorial on the machine language programming. A knowledge of Assembly language and the TRS-80 is assumed. The book does not contain source code for SU + , nor are specific details revealed about the intimate workings of the program. What is covered is an explanation of the system labels and entry points available in SU + .

PLANT SELECTOR – A SERIOUS PROGRAM FOR THE HORTICULTURIST

Plant Selector is an important program, particularly because, as far as we know, it is the first of its kind for our machines. It has been written up in a number of gardening and horticulture magazines, where it has achieved a very high level of interest both to the professional and amateur. Given the complexity of the subject, there are literally hundreds of thousands of plants in the world, it is rather surprising that nobody has come up with this idea before, because it really is a natural for a microcomputer, or for that matter a mini or mainframe computer, as its principal function is to select a plant, given certain parameters. This type of repetitive chore is, as we all know, a procedure at which the computer really excels.
The program consists of two major sections, the first Plant Retrieval, allows the user to select up to nine characteristics for any particular plant species. The second, The Plants for Specific Sites, maintains a series of data files containing lists of species for various locations. Characteristics of the individual species have been extracted from as many sources as possible, but all have been verified using the Royal Horticultural Society's, Dictionary of Gardening, and where appropriate the Eighth Edition of Bean's Trees and Shrubs Hardy in the British Isles. The data files supplied with this program fill four disks and contain over 5,300 plant names. The files are capable of holding a maximum of 12,000 species and hence, it follows that the files can be expanded by the user. It would also, of course, be possible to start the files entirely from scratch, although bearing in mind the work the author has already put in it might be a somewhat foolhardy exercise.
Individual species are given a general coding to describe their major characteristics. For example, large or small trees, deciduous or evergreen, right down to specific coding to categorise minor points such as aromatic foliage and decorative flowers. A maximum of nine and a minimum of four individual characteristics can be selected for any individual species. The program differentiates between frost hardy and frost tender species.
One of the advantages inherent in the ability to add plants to the files is that the program will allow the user to build up individual files for localised areas. This means that the user can encode personal knowledge, thereby making either generalised or very specific files.
Plant retrieval parameters, with some appropriate comments, are as follows:

Frost hardy or frost tender
In the context of this program hardy means that little or no damage occurs during the average winter
Deciduous or evergreen
Some evergreens are placed in both files.
Tree like or shrub like
Linked to size files, but shrubs not divided by size.
Plant size
Small to medium species. Medium to large species.
Flowering season
Species have been allocated the flowering period given in Hilliers catalogue but this can be changed to suit local conditions.
Foliage type
Typical green; red/purple; golden/yellow; silver/grey; variegated.
Plant habit
Fastigiate/erect; pendulous/arching; contorted/twisting; spreading/suckering; prostrate/low growing (and ground cover); typical habit.
Minor characteristics
Bold/attractive foliage; striking autumn colour; ornamental fruits; fragrant/attractive flowers; aromatic foliage, rapid/strong growth; moderate growth; ornamental bark/spiney branches.

It is possible to run Plant Selector on a single drive machine, but it would mean, of course, that a fair proportion of the disk is taken up with the system and it follows from that, that the data files will have to be somewhat shorter. In order to make it easier for single drive owners, the data files are supplied in a sufficiently small length so that they will fit on a stripped down system disk.

UPDATES

Jumbo

A major update in Jumbo allows for the provision of the effect of wind in the program. The pilot is now given winds on the ground and winds aloft, together with a figure for true air speed. Rather ambiguously, this has made some of the approaches easier for the novice pilot to carry out. If the wind is very high, of course and across the runway, then he will have greater difficulties. The selection of the force of the wind is random, however, and more often comes up with a rather more helpful direction and force. The program takes into account "crabbing". This is an effect whereby in order to counter balance the effect of a cross wind an airplane is actually pointing in a direction other than that in which it is flying.

Just as important an update as the above is an overall one in which the authors have speeded up the program, particularly in the areas of response to the ailerons and elevators. Jumbo now performs in these two respects (and for the most part in all others) in exactly the same way as a real jumbo. The ailerons in the first version, although easy to use, were not very realistic, trimming them out to zero meant that the airplane would automatically, all be it slowly, come back to straight level flight. This is not so in life and is not so now in Jumbo. Whilst speaking of straight and level flight, another small inconsistency has been cleared up, in that it was possible in the first version to take a time out whilst the airplane was in an attitude other than straight and level. For instance if Jumbo was climbing at two or three thousand feet a minute, one was able to take time out. This was unrealistic because, obviously if one could take time out in real life and one was pointed upwards, an hour's time out would finish with Jumbo somewhere outside the atmosphere! Accordingly it is now no longer possible to take the time out feature unless one is in straight and level flight. Several other minor improvements have been included, many of them at the suggestion of jumbo fliers. Worth a mention is the fact that the bearing to the destination airport is now shown on the main screen. In other words it is now no longer necessary to go to the map display. This is particularly important when making an approach. Molimerx customers in the U.S. and Australia have asked (rather strongly) for versions of Jumbo which enable the flying of it in their country. There are, therefore, two new versions of Jumbo, one for the U.S. and one for Australia and New Zealand. We would like to emphasise that these are, essentially, the same programs as the the U.K. one, it is the venue that has changed. Nonetheless should any English customer wish to have either of these versions we can supply them in the U.K. New purchasers of Jumbo who for some reason would prefer to have the U.S. or Australian versions must so stipulate in their order. Existing owners of Jumbo may purchase these overseas versions at half price, that is to say £7.50 for tape and £8.50 for disk both exclusive of V.A.T. and shipping. We would remind customers that in order to upgrade, or buy the U.S. or Australian versions, the original disk or tape must be sent in to us.

PASCAL

A number of improvements have been incorporated in Pascal in the 5.1 version. VARPTR has been extended to procedures and functions and returns the address of the start of the code. Files may now be declared and the required type TEXT is supported. Files may be passed as parameters. Equivalents to the Basic INP and OUT are now included. A number of mostly transparent improvements have been made in the compiler, including better error pointer positioning and re-try options on file opening errors. Lower case is now accepted in Options or Quit. The compiler loading has been speeded up and the file XXPASTAB/ZYX is no longer required. Major improvements have been made to the editor for the method of holding text has been re-designed and some restrictions have been removed and operations speeded up. The text capacity has been increased from 24,000 to 30,000 characters. A small bug in the FOR loop has been corrected.

smal-LDOS

A number of customers, particularly those who have just bought disk drives have commented on the fact that smal-LDOS does not contain a utility for copying machine language tapes to disk. For copyright reasons, Logical Systems are unable to put the LDOS facility, CMDFILE, in the smal-LDOS package, but have given us permission to write and include one ourselves. This has now been done and as of mid October all smal-LDOS's have gone out with a file TDU/CMD on it. We feel that the inclusion of such a utility comes within the umbrella of our normal software support and, hence, there will be no charge for this upgrade.

EDAS

This is not an upgrade in the true sense of the word. A completely new version of EDAS is now available numbered IV. It is described elsewhere in this list. Unfortunately the position is a little complicated. IV has been issued to support the C language. Both this and therefore IV require some of the features of LDOS and is only available for use under that disk operating system. It therefore follows that IV is of no use to customers who do not possess LDOS. Existing owners of 3.5.2 or earlier who also own LDOS may change to IV at a charge of £35; this is, essentially, the same price as in the United States where the change costs $60. This is a high cost, but we would remind customers that, as stated above, EDAS IV is really a new program.
We must emphasise that EDAS 3.5.2 which, of course, is compatible with TRSDOS, will continue. Purchasers of it after the issuance of this list, however, will not be permitted to change to EDAS IV at a lesser price. If a customer requires EDAS IV then he should buy it now. If he knows that he is going to continue to use TRSDOS then he has the option of buying 3.5.2 and should buy that system.

IMPORTANT

From this December 1982 list onwards we will be producing the majority of our disk software on a special booting disk. The big advantage of this is that it will boot on either a Tandy Model I or Model III and the Genie machines. The disk includes a very high speed copy program as well. The procedure is that you produce a stripped down disk operating system for your Model – say TRSDOS 2.3. You insert the disk which you receive from us into your machine, it immediately boots and tells you what programs will be copied off it and what space it will require on the stripped down DOS disk. You make certain that you have this space available and then simply follow the instructions and the programs which we send you will be very speedily copied onto your system disk. The boot disk will work on single drive systems.

We have entitled this notice "Important" because, although on new programs the instructions will mention this new system, it would be too arduous to go through all the existing instructions, even to add an addendum to each, hence, as we slowly switch existing stock over to the new system, this notice will be the only notification that customers will receive. They cannot, as a matter of fact, be in any doubt as to whether they have the old system or the new one, for on the new one it comes up first of all with a very fancy title page with our logo! If you receive such a disk from now on you must follow the above instructions.

The above does **NOT** change the necessity of advising us if you have non-standard disk drives.

DISKS TO GO WITH BOOKS

It seems to be quite the fashion nowadays to issue disks in support of their books, for John Wiley and Sons have now issued a disk in support of their book "Fast Basic", which is described elsewhere in the catalogue. This contains five sections. The first contains the five teaching and utility programs; the second teaches the setout of the Variable Table; the third program, VIEW/MOD displays, searches and modifies RAM in blocks of 256 bytes per screen. The fourth is a Fast Basic version of the third and finally the fifth is a Z80 disassembler.

Basic Faster and Better

We have been selling this book for sometime and when we first wrote it up in the catalogue we said that if there were enough enquiries we would stock the two supporting disks. There have indeed been a number of enquiries and we are, therefore, stocking them both. One is a demonstration disk and one is a library disk. They are listed in the Index as BFBDEM and BFBLIB respectively. For some reason that we do not quite understand, both of these disks require the user to have two disk drives.

FEBRUARY LISTING

MAH-JONG – THE UNIQUE CHINESE GAME

Mah-Jong is a Chinese game usually played with ivory and bamboo (or nowadays plastic) bricks. These are arranged into walls from which the players deal themselves a certain number. In China there are one or two versions that are actually played with small cards. For some reason these are only about ¾" wide and two or three inches deep. Almost invariably, however, Mah-Jong is played with bricks or, as they are more normally called, tiles. Comparisons can sometimes be self destructive, or as the Americans like to say, non-productive. A comparison between Mah-Jong and Rummy in our view is very definitely non-productive. None the less, to somebody who has never come across the game a description of Mah-Jong to the effect that it is Rummy played with tiles, although to the avid Mah-Jong player would be sacrilegious, still contains a certain amount of truth. The game first became popular in the Far East in the late nineteenth century. It is a game for two, three or four players, but invariably four take part. It has been rumoured that the game has at various times been outlawed by various Chinese governments because it is so addictive. One cannot speak for inside China nowadays, but if you go to Hong Kong today and walk along the streets removed from the heavy traffic flow, you will be inundated with the sound of Mah-Jong tiles being slapped on the table. This is no exaggeration. The Chinese take their Mah-Jong very seriously and it is very frequently played when literally thousands of dollars are at stake on a single game. It has been said that the Chinese like the game so much because of the tiles themselves. Players rack them around with what appears to be gay abandon, but is usually a measured and skilful act. In particular they take great joy in being able to pick up a large number of tiles at one time by constructing them into little walls and using the hand pressure at each end to maintain the structure intact when lifted. Whilst it is sad that none of these biplays of Mah-Jong can be reconstructed on the computer, the author of Mah-Jong has gone a long way, in fact pretty well all the way, in reconstructing the game itself. In other words, you will not be able to play with the tiles, but you should be able to have a good game of Mah-Jong.

There are five different sets of tiles of general interest in Mah-Jong. Before we describe these let us describe two other sets which are not of such interest. These are Flowers and Seasons. In China, where as we have indicated a large amount of money is gambled on Mah-Jong, the Flowers and Seasons are of utmost importance because their only effect on the game is the scoring. There are many versions of Mah-Jong, but the most common is to remove the flowers and seasons from one's hand immediately that your hand is dealt. They are then not considered until the end of the game when the scoring takes place. Flowers and Seasons are supported in this very real and very full simulation of Mah-Jong. However, the most important sets are Circles, Characters and Bamboos plus, Winds and Dragons. To some extent the first three and the last two are separate types of sets. The first three are similar to suites in a pack of playing cards. Each suit is numbered from one to nine. The two sets, Winds and Dragons, however, are not numbered and there are four in each set of four. For instance, the winds consist of East, West, South and North. There are four East wind tiles, four West wind and so on. Dragons are divided into colours, red, white and green (sometimes blue). There are, of course, a number of differences between the categories of Circles, Characters and Bamboos versus Winds and Dragons, but the most important point that separates them is that as the first three consist of numbers they can be collected in a run. Thus one can collect in one's hand four, five and six of bamboos. This is called a Chow. Winds and Dragons, however, have no numbers, hence, one has to collect three or four of, say, the East wind or the Red Dragon. This is called a Pung. Pungs can also, of course, be collected in the ''suites''. Three of a kind is, as we have said, called a Pung. Four of a kind is called a Quong. These, therefore, are the three principle modes of collection in one's hand; Chow, Pung or a Quong. To reiterate, Chow is a run of three (and incidentally, only three), a Pung is three of a kind and a Quong is four of a kind. At all times a player has 13 tiles in his hand. It therefore follows that when one goes out or has Mah-jong, then there is an odd couple of tiles over. This is so because one picks up a tile at the start of one's turn. That is 13 in hand plus one pickup equals fourteen. This is the only time that an exception is made. That is, neither a three nor a four. It is called a Sparrows Head and consists of two bricks. They must be two of a kind. They cannot be a run. More often than not, in practice this Sparrows Head is formed by two Winds or two Dragons but this is not a rule of the game. One may have two of the same number of Circles or two of the same number of Characters.

In order to win the game one has to declare Mah-jong. As we have indicated in a round about way, this comes about by having four sets of three, plus a Sparrows Head of two. Probably one of the most complex parts of Mah-jong is the scoring. To us, as lesser Westerners, it can take almost as long to score a game as to play it. One of the big advantages of a computerised Mah-jong is that this chore is taken off the dealer's hands. There are many aspects of Mah-jong that we have not mentioned. The fact that it is a national game, or as some people say, a national sin, of the biggest populated country in the world, should show what a fascinating game it can be when played. Playing it on the computer means that one loses the joy and almost sensuous feeling of fondling tiles or bricks. On the other hand, as we have indicated, one does not have to go through the rigmarole of scoring. Sometime ago, when we described the simulation Jumbo, we mentioned that an author has to make a decision when he sits down to write his program as to whether or not he is prepared to sacrifice some of the finite memory space of the computer to graphics. We made the point there that if one took up space with graphics then it is not available for the actual true intent of the game, namely a simulation. Precisely the same remarks apply to Mah-jong. It is in no sense a graphically orientated game. It is played on a ''table'' which is, it is true, divided up by lines to make the various hands more understandable, but all of the space, and it uses up a full 16K, is in this simulation for betterment of the game. There is a maximum of four hands available in Mah-jong. In the computer version, the computer plays one hand. It therefore follows that there may be up to three further players.

JOVIAN – HIGH GRAPHICS IN HIGH SPACE

Jovian is written by Computer Shack who also wrote Cyborg. Before we forget, we should have mentioned in the write-up to Cyborg that it features a new type of graphic software writing which has been named Wrap Around Graphics. As purchasers of Cyborg will have found out, this really has to be seen to be believed. In any event, the point at the moment is that wrap around graphics are also featured in Jovian. They really do defy description in the written word. For instance, when Jovian first powers up you are given quite outstanding graphics even before the game starts. If one had to describe Jovian in a few words, it would be as an improved Cyborg; perhaps one more orientated to technological improvements. The basic scenario is that you are faced with three galaxies under Jovian domination. The purpose of the game is to destroy as many Jovian space stations as possible. They are destroyed by shooting and hitting all eight of the pods connected to the station. When you have destroyed all of the stations in your present galaxy you will automatically be transported to the next one. Your ship is equipped with two sensors; one short range and one long range. The short range sensor displays your immediate surroundings and is used for combat and movement. The long range sensor shows all aliens, space stations and station pods, whether activated or de-activated. All pods must be blasted before the station goes. The galaxies, incidentally, are split up into sectors, 20 sectors to a galaxy. Hence, the hunt is cumulative. To kill the stations you must destroy its pods. To get out of the present sector you must destroy all the stations. To get out of your present galaxy you must destroy all of the stations in all of the sectors. If you should be sufficiently skillful to gte out of the three galaxies, then you have won. To destroy aliens and station pods your ship uses high energy plasma bolts. These bolts are fired in pairs and up to four pairs can be on the screen at any one time. The Jovians may have set mines which will cause all shots presently on the screen to be disrupted. Incidentally, if you hit a mine, it will turn into an asteroid. Presumably just a chunk of metal. There are three types of alerts when in a Jovian sector; Green, Amber and Red. They all carry various penalties. In particular, they affect the amount of bonus score that you have. Should you be sufficiently unskilful to allow this to become nil, your plasma becomes unstable causing self-immolation. This must be an American expression. In English, it means that you blow up. The game, in addition to being highly graphically orientated, also as you may have gathered, is orientated towards shooting and is also a points game. So it does lend itself towards competition between individual players. Excellent sound is supported.

TEMPLE OF BAST – FIRST OF A NEW SERIES?

This is a new machine language Adventure from a very promising new author, M. McMahon – new in the sense of adventures, that is! We have not been so impressed with the quality of a new Adventure for some time. It follows what has now become almost the standard for adventures; that of the computer getting the player through a complex scenario. In the Temple of Bast, the purpose is to find the Gold Ingot. What we like about this new Adventure is that, like most of Brian Howarth's later work, it is truly mysterious. Although it is nothing whatsoever like the original Adventure in context it does make one cast one's mind back to that classic piece of software. The game starts off in an old derelict house (one of these days we will get an Adventure that starts off in a brand new Council House!) in London. Obviously, we cannot go into too many details, but perhaps it is not giving too much away if we say that, if you want to continue on in this world, you can use only one exit from the house. After you find this one exit and use it, you will find yourself in Ancient Egypt. This is a dangerous land filled with mummies, vicious cats, tombs and, of course, the inevitable genie; not to be confused with the microcomputer of that name! The genie apparently has been asleep for eons and does not relish the idea of a modern microcomputer user waking it up. From there on you are on your own .....

IMPORTANT

Customers may not be aware that we get a large number of what we call non-standard orders. An example would be where we have stated in the catalogue that a program is for tape use and yet the customer orders it to be put on to disk. We must make it abundantly clear that we fill these orders. We are unable to confirm them with every customer as they arise. Taking the above example, for instance, Enhanced Basic permits the running of Level II programs from disk. We cannot write to every customer that orders a tape program on disk to ascertain whether or not he has Enhanced Basic.
Wherever possible, when a non-standard order is noticed, we insert a note drawing the customer's attention to it. We are unable to guarantee that we do this, however, and once again we must emphasize one of the Terms and Conditions under which we sell; namely, that it is for the customer to make certain from the description in the catalogue that what he is ordering is actually what he wants.

DUNGEON ESCAPE – GET OUT IF YOU CAN

The idea behind Dungeon Escape is simple. For some reason which escapes us, you have been committed to a dungeon. All you have to do is get out of it. Naturally, this is not made too easy for you. Before we go into the exact details, the structure of the dungeon is in three levels. To progress from one to the other you not only have to find two ''stones'' but you have to fight to keep them. If you succeed then you go on to the next level and so on until you presumably find yourself in the bright sunshine. Personally, we have never got that far! That is the general idea; now to the details. First of all, when you start the game and find yourself in the dungeon you must decide whether or not you wish to be a fighter, a thief or a magic user. To some extent these are self-descriptive, but depending upon which one you choose, you will be penalised as far as the others are concerned. For instance, the fighter can wear armour, use any weapon and is least susceptible to poison. A thief, on the other hand, is warned of most traps, can read scrolls, is always first in combat and, being a thief, can sneak by creatures more readily. A magic user starts with an arsenal of spells and has an extra cloak. The disadvantages are that a fighter cannot use spells and a thief cannot wear armour or use a staff. As a magic user has the benefit of mystical spells, which obviously carry their own advantages, he has the most disadvantages in that he can wear no armour, cannot use a sword and is most susceptible to poison. As you will have gathered, Dungeon Escape is a complex program and we would not be able to go through all of the problems that you are likely to meet, in this description. Just to give you a sprinkling, however, you will meet over a dozen types of monsters, each with different characteristics. All of them have special methods of attack. The dungeon has a number of different traps, varying from green gas and white smoke to crumbling passages and armour disintegration. One little chap that we rather care for is named ''The Thief'' (he has no connection with the role that you accept at the beginning of the game). He is a little mischievous leprechaun who has a tendency to pilfer items from under even the longest nose. He is troublesome, but manageable unless he gets your magical map.
As we have said, the objective is to get out. At least something is logical in Dungeon Escape because you start on Level 1. Anytime after finding at least two stones, returning to the exact place from which you started will take you to the next level. There you must find four stones and again, quite logically, on the third level you must find six. Throughout your escapades you will, if you are either skillful or lucky or both, come across some treasures and if you are still luckier and manage to get out of the dungeon alive, you will have the pleasure of totting them up. However, we should re-emphasize that stones are the important thing. After all, as Solomon found, gold of itself is not very valuable. As a matter of fact it is a most uninteresting metal. It only becomes important if you can spend it. If you are confined to the dungeon for a lifetime, your treasures will do you little good! Extensive sound is supported in this game.

ARACHNID PLUS – THREE IN ONE

This is compendium of three games. They are all different and separate from each other.

Arachnid
We thought that we had met all sorts of games until we saw this one. Believe it or not it contains a gang of 12 extra terrestrial spiders. Spiders, as a matter of fact, are quite harmless creatures, but they have the connotation of being horrible. So no doubt that is why they have been chosen in this game, for these particular spiders are bent on the destruction of planet Earth. The player retaliates by using a laser cannon. When the game starts you are in the middle of the spiders' nest. These unpleasant creatures have the power to drain one's strength. Accordingly, this will fluctuate with the number of spiders that you manage to eliminate. Killing them, incidentally, is not all that easy. They only have one small spot on their body which, when hit, is fatal. There are nine levels of play and the game, of course, has sound.

Baja
There have been a number of car racing simulations, but Baja is one of the best that we have seen. The graphics are good, particularly a speedometer which is always shown at the top of the screen. In addition to sand dunes and desert rocks, the driver has to contend with the road narrowing and some quite drastic curves. Speed varies up to 150 miles per hour, so this is no game for the beginner driver! The game is designed for up to six players and it supports sound. As we have said, racing games are not unusual on microcomputers. Perhaps the best way of describing this one is to say that it has taken an old idea and brought it up to date.

Warzone
This is similar to a number of different types of board games available for the TRS-80 and Genie machines. The object is to isolate your opponent by gathering or obliterating the squares surrounding his position. Two players may play or a single player may take on the computer. In the latter case there are three levels of skill. This is not an arcade game and, of course, graphics are not usually associated with board games. None the less Warzone has one or two gimmicks of its own in the graphic field. In particular, we like the way a white square is taken. It seems to evaporate into space – anyway it is different!

All three of the trilogy are reasonable games on their own. When they are put together they represent extremely good value.

CYBERCHESS – A CHESS IMPROVEMENT SYSTEM

Cyberchess is an entirely new concept, at least as far as we know, in chess programs for the microcomputers that we support. It is not just another computer chess game, it is a large and ever expanding chess improvement system that instructs the user, but also analyses the movements and strategies. The program comes in two parts. Firstly a System disk, which contains the Cyberchess System program which, it is important to understand, is required to play all Cyberchess games. Also on the System program are two fully analysed amateur class games and two fully analysed professional class games. When Cyberchess speaks of "amateur class" they mean a rating of unrated to 1650. Professional classes are rated between 1600 and 2200. The second category of disk are Games disks, or Program Packs, as they are called. We are told that there are over 100 Program Packs available for Cyberchess but we are starting off with one amateur pack and one professional. These contain either four analysed amateur class games or four professional games. We would like to emphasise the structure. The System disk must be used for all Cyberchess disks. In other words, it is required before the Games disks can be played. The reason for this is quite simple; it has the master Cyberchess program on it.

Each game has either been designed or actually been played by a highly rated Chess Master. There is a unique Instruction Mode to analyse your movements and an exclusive rating system to provide mathematical rating of all your moves. It could truly be said that, whether you are an amateur or a master, the Cyberchess System has something for you. Most importantly Cyberchess allows the user to select the level of play and challenge, to match his increasing ability. We are not sufficiently experienced in chess to know whether there is any difference, but the ratings mentioned above are those approximating to the U.S. Chess Federation rating. Each game that is supplied on the disks may be played in any one of five different modes. The following is a short description of each mode:

Instruction Mode – In this mode you will not be timed as this is the mode to study and analyse the game. Each and every move you make will be given a numerical rating ranging from +1 to −6 with +1 being the best possible move and −6 the the worst. After each selection you make a generalised prompt as to the quality of the move will appear and after you have found the correct move, you will have a chance to see the analysis or reasoning behind each one of your possible choices.

Tournament I Mode – This mode of play simulates tournament play and it is used for practice play with a clock. A clock is displayed with the seconds ticking off, and you are allowed two hours to make the first 40 moves and one hour for each additional 20 moves. The computer stops and restarts the clock as necessary and if you fail to make the required moves in the allotted time, you will be declared as having lost the game on time. No numerical ratings are given to the moves in this mode of play; only the word INCORRECT appears when you make a wrong choice (although you are being penalised). The computer will not display any qualitative prompts and the analysis of the moves is not available to you. In a nutshell, you are playing in a tournament and no hints, help, or any kind of interference is allowed.

Tournament II Mode – This mode of play is similar in every respect to the Tournament I mode above with the only difference being that you will select the number of moves you must make during each hour of play rather than the 40 + 20 moves above.

Speed Chess I Mode – This mode of play is similar in every aspect to the Tournament I mode above with the only difference being that you select the time (from 1 to 60 minutes) that you will be allowed for the entire game rather than the number of moves per hour.

Speed Chess II Mode – This mode of play is similar to the Speed Chess I mode above but instead of selecting the time allowed you for the entire game, you select the total time (from 10 to 60 seconds) you will be allowed for each move. In this mode of play the clock will be automatically reset to 0 at the beginning of each move.

AMT–001 — PROGRAM PACK | AMATEUR — CLASS | UNRATED–1650 — FOR PLAYERS RATED

CONTAINS 4 FULLY ANALYZED CHESS GAMES FOR USE WITH THE CYBERCHESS™ SYSTEM PROGRAM

GAME	COLOR	OPENING	MAIN FEATURES
1	W	CENTER COUNTER	AFTER A SACRIFICE WHITE WISELY AVOIDS EXCHANGES AND PURSUES A CAREFUL COURSE OF ATTACK
2	B	FRENCH DEFENSE	A GOOD EXAMPLE OF HOW TO EXPLOIT WEAK OPENING PLAY BY YOUR OPPONENT
3	W	SICILIAN DEFENSE	AN ILLUSTRATION ON HOW TO STORM A FIANCHETTOED KING'S WING
4	B	QUEEN'S GAMBIT DECLINED	A SACRIFICE OF ROOK & BISHOP OPENS THE WAY FOR A METHODICAL PURSUIT OF THE EXPOSED KING

The level of play can be "fine tuned". We have already mentioned that the disks come in amateur or professional ratings. When you actually start any particular game you will be able to select to play from four levels. It could be said, therefore, that each game contains four separate games. Usually, of course, the opening moves are known to you and these can probably be played straight off the screen on to the Chess Board that you should use when playing Cyberchess. Every 10 moves, incidentally, a diagram of the present position appears on the screen, so that you may verify your Board. The program will comment on your selections and, as we have said, analyse your play. The illustration gives an example of the type of analysis.

SMALL FORTH – A LIMITED FORTH COMPILER

There has been some interest in Forth as a language for the TRS-80 for some time. It was one of these things that seems to have started off with a great fanfare, but then settled down to a continual, but rather mild, interest. A number of customers ring us up and ask us, really whether we can tell them more about Forth, than whether we have a Forth Compiler in stock. We felt, therefore, that this Small Forth would be of great interest because it is offered as a simple introduction to the language for those who would like to try it out without having to pay for a full compiler. Most full size Forths contain around 100 to 150 words in their built-in dictionaries. Small Forth contains about 60. Fairly rudimentary editing facilities are included which should be sufficient for short programs. The contents of the dictionary may be sub-divided as follows:

1. A subset of the standard Forth primitives, or 'kernel', i.e. words not further defined and accessing machine language routines. This subset accounts for probably 75% of any Forth program.
2. A subset of extended Forth for the TRS-80 enabling cursor control and graphics.
3. A very few standard Forth words defined in terms of the primitives.
4. A set of words, special to this implementation, for entering, listing, editing and saving programs.

Small Forth operates in two modes, Immediate and Program. In the former, an asterisk prompt is displayed and any command entry from the keyboard is immediately compiled into pseudo code and obeyed. Direct commands and compiler directives such as word definitions and constant and variable declarations, may be freely mixed. In the Program mode, a program (normally consisting of compiler directives) is entered into a "screen" which is a text buffer capable of holding 16 lines of up to 60 characters each. Screens, incidentally, may be saved on to disk and later reloaded into memory. As we have said, a simple editing facility is provided and when the screen is correct it may be compiled. Programs may consist of more than one screen, but only one may be in memory at any given time. It should, therefore, be compiled before the next screen is entered or loaded. There is a special command available to enable the direct loading and compiling for a number of consecutive screens. Small Forth respects HIGH$ in LDOS and HIMEM in NEWDOS. There should, therefore, be no incompatibilities in both of these systems. Small Forth distinguishes between both upper and lower case characters. All built-in words are in upper case.

As we have said, Small Forth is aimed at those customers who wish to get their feet a little wet in Forth. As such, it fulfils its objective admirably. Small Forth comes with a 30 page manual which, to some extent, is instructional. It contains an introduction to the stack and the dictionary so that a newcomer to the language should not be too far lost. It has been priced at a comparatively low figure so that people will be encouraged to investigate this language, but this decision has another side to it, namely, that we will not be able to answer telephone calls on whether or not Small Forth contains this, that or the other. It is a nice, small Forth compiler. We have priced it comparatively low, but the customer will have to decide whether to buy it from this description alone.

DRIVER COMPILER – MAKE YOUR OWN PRINTER DRIVERS

This is a fascinating program whereby the user can not only construct his own character table, but he can also compile into Machine Language a custom Driver. The program is only for Epson printers with dot addressing. As far as we know this means the MX80 series, except for the first machine issued. There was a Graftrax modification after the first machine and after that a Graftrax Plus. Thereafter Epson issued the MX80 Model III. To the best of our knowledge, all of these, with the exception of the first, is supported by this program. We are told by customers who have been testing it for us that it may well be compatible with the MX100, but of this we have no personal knowledge.

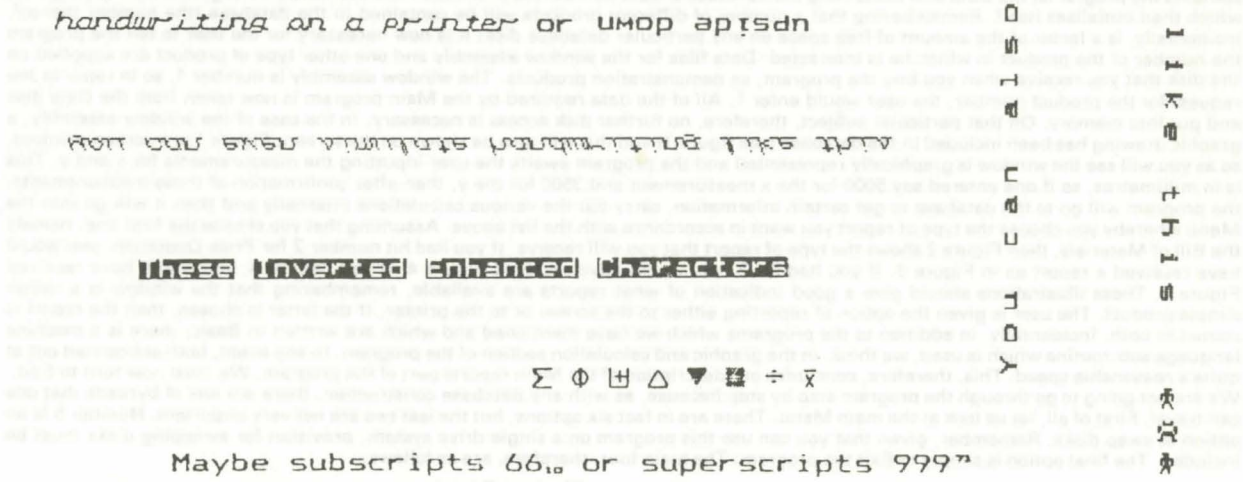
As we have said, the purpose of the program is to construct a customized character set or table and then to compile into Machine language a driver which will enable this character set to be used. The program comes with some demonstration character sets and the result of using some of them is shown below. As you can see, you can attain some weird and wonderful effects, from upside down writing to mirror images. The custom characters take the place of existing characters, hence those which are replaced cannot be used. For instance, if one replaced the normal lower case characters with a new font, then lower case characters would not be available whilst that driver is being used. The program is very versatile and a lot of the functions are built in. For instance, the sideways or upside down characters are obtained by rotating the character. An option in the Menu permits one to rotate in three steps, namely 90°, 180° and 270°. This rotation is applicable even to mirror image copy. The Character Tables can be saved and retrieved from disk and thereafter can be amended. Perhaps it would be easier to give the Menu, which is as follows:

1. Load Character Table from Disk.
2. Save Character Table to Disk.
3. Amend/Create Character Table.
4. Compile Printer Driver.
5. Print Character Table.
6. Invert Character Table.
7. Rotate Character Table.
8. Exit from Program.

As will be seen, the first two commands are to save or retrieve the Character Table. The third is the one which is used when first setting up the Character Table, or when editing one that has previously been created. The fourth option compiles the Printer Driver. Incidentally, some of these commands take longer to carry out than others. In particular, the rotation of an entire alphabetic character set can take up to half an hour. On the other hand, the handwriting character set is quite quick, because only the lower case letters have to be formed. The fifth option prints the Character Table and the sixth option is an example of what we were mentioning before, namely that a number of functions are already built in, for it inverts the Character Table. The same remarks apply to option 7 which rotates.

So far, we have been speaking mainly of handwriting and turning letters up on their heads. It must be emphasized that the user can create, within reason, pretty well any character that he wants. When the third option to create a Character Table is called, the user is shown a 12 × 8 matrix. After choosing the ASCII number that this is to represent, a cursor appears which may be manipulated by the arrow keys to the appropriate matrix position; a point is then either set or reset. There are a number of convenience features. When editing, for instance, one can hold an arrow key down for repetition.

This program, therefore, seems to us to give the Epson user complete control over his font and also includes a number of rather nice features, such as automatic invert and rotate. We have not as yet tried Driver Compiler with any DOS other than TRSDOS and it is the sort of complex software that might give troubles.



MONITOR 5 – MORE THAN AN UPGRADE

The Monitor series, written by Hubert S. Howe, has attained an almost classic status in the market. He started off with Monitor 1 and for some years Monitor 4 was the top of the line. Monitor 1 and 2, incidentally, have been discontinued. For the last two or three years we have only been selling Monitors 3 and 4, which in some ways were different, but overall it could be said that Monitor 3 was the tape base monitor and Monitor 4 the disk. Monitor 5 has rather changed this situation because it is available on tape or disk, although obviously, strictly disk commands in it will be of little interest to the cassette user. The great difficulty which an author faces when he comes to write a Monitor is a question of size. Assuming that he is writing a Monitor chiefly aimed at the Assembly language programmer, then on the (reasonable) assumption that most machine language programs are around 6K in length, he has quite a lot of room for his Monitor. On the other hand, a prospective Monitor author who is aiming at the Basic programmer has to bear in mind that many Basic programs are very long, leaving that much less space for his Monitor. We have always thought that Monitors 3 and 4 have struck up a rather nice balance between these two conflicting requirements. Monitor 5 still does, but Hubert Howe has conceded defeat to those customers who have been pressuring both him and us to produce the Monitor series with the inclusion of the facilities of machine language breakpointing. However, he seems to have been able to do this and still keep the Monitor to a reasonable size. The 16K version, for instance, loads from 6000H to 7FFF; in other words, about 8K. This leaves enough space for a fair size Basic program in a 16K machine and leaves ample room for most machine language programs.

Monitor 5 consists, essentially, of all of Monitor 3 and 4 plus an entirely new section containing debugging commands. There may be some small additions in the rest of the Monitor. For instance, we do not think that the capability of finding a string was included in Monitor 4. There may also be some small omissions. In the main, however, as we have said, Monitor 5 contains everything that Monitor 3 and 4 contain, plus a debugging section. This is split into six separate commands. The first is a display of the registers. This is the entire set including alternates. The next command enables the user to set registers to any value that he wishes. The next command is to set a breakpoint. Up to 10 may be set. When one is hit, the registers are displayed and, of course, the program pauses. The next command allows the user to instruct the Monitor to begin execution of a program at a specific address. Before beginning execution the registers as changed by the user are loaded. Hence, it is possible to go into any address and commence execution with the registers loaded as required. The penultimate command is a Single Step facility. This, of course, single steps through a program displaying the registers as it goes. Two parameters are allowed, one to restrict the number of operations to be executed and the other specifies the location where execution is to begin. The final command is a Single Step Call and is identical to the Single Step except with breakpoint following a CALL pointers are set to the next location in the current instruction stream so that the breakpoint will occur after the return has been made from the call. Finally we should mention that Monitor 5 supports the RS232, broadly speaking, as described for Monitor 4. We have used Monitor 5 for a little while now and were unable to find any drawbacks. Present owners of any of the Monitors will probably have to get used to the fact that there are now so many commands that two letters are used rather than the previous one.

JOB COSTING – FOR ANY TRADE

There are a number of job costing programs on the market, but they are all directed to specific trades. The problem with that approach is that this type of software is inherently quite expensive and, although a member of the specific trade would, of course, get his money's worth, those users who are interested in estimating for a number of different types of businesses would have to have one program for each, which is not economically viable. This program is written by D. Stobbs, an experienced programmer, who wrote Keyboard Mask (of which, incidentally, there will be an improved version in the next listing). He has come up with a very nice way of approaching the job costing program problem.

The overall idea is that the user constructs a pretty ordinary sort of database. A number of different products can be contained in it and, of course, a number of different databases can be constructed. Accordingly, the provision for expansion is unlimited. The database contains all of the information that is required and is analogous to the list that an estimator, of necessity, has to make of his materials, costs and so on. This, therefore, is the first part of the package; the ability to compile a database and to edit it at any time thereafter. The second part is the main part of the package and actually generates the reports required by the estimator. These two sections of the package are called Edit and Main respectively.

The word "leveraging" is often misunderstood. Perhaps because it is rather difficult to describe. What it means in effect is that, when one puts in a large amount of work at one time in one project, then that project will be used in the future, time after time, to produce the end result required and thereby save far more work than originally put in. The more often the useage of the program is repeated after it is first written, the greater the leverage. This Job Costing program has a great deal of leverage. Once the initial database is constructed for any given product, then obtaining the various reports is extremely easy. More importantly, when the product is dependent upon, for instance, size, then that size may be altered when the Main program is used and all of the parameters entered into the database will be adjusted so that the output of the Main program will be appropriate to the new size of product. In a minute, we will be using, as an example, an aluminium window. Once all the data has been inserted into the database regarding the window, then when the Main program is run, you may alter the size of it by simply entering in the measurements and all the reports will be altered accordingly. This is true leverage.

As most users are interested in the end product, first we will deal with the output of the Main program. Four reports may be generated as follows:

1. Bill of Materials
2. Price Quotation
3. Standard Costs
4. Profitability analysis

Throughout this discussion, we are going to use the example of an aluminium framed, but wooden cill, window assembly. We will briefly go over the running of the Main program using this window as the illustration. As Job Costing is compatible with a single drive machine (minimum configuration is single drive 48K with an optional printer) it is necessary that, having booted up on the disk which contains the programs, the Data disk containing the database should be inserted in Drive 0. The user is led through this by the program, which then initialises itself. Remembering that a number of different products will be contained in the database (the number thereof, incidentally, is a factor of the amount of free space on any particular database disk) it is now necessary for the user to tell the program the number of the product in which he is interested. Data files for the window assembly and one other type of product are supplied on the disk that you receive when you buy the program, as demonstration products. The window assembly is number 1, so in reply to the request for the product number, the user would enter 1. All of the data required by the Main program is now taken from the Data disk and put into memory. On that particular subject, therefore, no further disk access is necessary. In the case of the window assembly, a graphic drawing has been included in the database (see figure 1) and this will now be shown on the screen. Figure 1 is a screen printout, so as you will see the window is graphically represented and the program awaits the user inputting the measurements for x and y. This is in millimetres, so if one entered say 5000 for the x measurement and 3500 for the y, then after confirmation of these measurements, the program will go to the database to get certain information, carry out the various calculations internally and then it will go into the Menu whereby you choose the type of report you want in accordance with the list above. Assuming that you choose the first one, namely the Bill of Materials, then Figure 2 shows the type of report that you will receive. If you had hit number 2 for Price Quotation, you would have received a report as in Figure 3. If you had hit 3, you would have received Figure 4. If you had hit 4, you would have received Figure 5. These illustrations should give a good indication of what reports are available, remembering that the window is a rather simple product. The user is given the option of reporting either to the screen or to the printer. If the latter is chosen, then the report is routed to both. Incidentally, in addition to the programs which we have mentioned and which are written in Basic, there is a machine language sub-routine which is used, we think, in the graphic and calculation section of the program. In any event, both are carried out at quite a reasonable speed. This, therefore, concludes our description of the Main reports part of the program. We must now turn to Edit.

We are not going to go through the program step by step because, as with any database construction, there are lots of byroads that one can travel. First of all, let us look at the main Menu. There are in fact six options, but the last two are not very important. Number 5 is an option to swap disks. Remember, given that you can use this program on a single drive system, provision for swapping disks must be included. The final option is simply to Exit the program. The main four, therefore, are as follows:

1. Browse ... Display a Record
2. Delete ... Remove a Record
3. Update ... Modify a Record
4. Format ... Create a Database

As will be seen, the first three are commands or options applicable to manipulating a database that has already been written. The fourth is to create an entirely new database. As always in databases, these two sets of functions often overlap. Hence, we will concern ourselves with the first three options. We will take as our example the same double glazed window that we used under the description of the Main program.

The first option is Browse; in other words, to look at the contents of the database. Before we do that, we should explain how the database is made up. Like all other databases it is split into records. In our case the primary record is that of the product. The double glazed window that we are dealing with happens to be product record number 1. Just as in a common type of database, where the date, name, address, telephone number, purchasing history and so on constitutes one record, so in our case the double glazed window product constitutes a record. It would not be wise to take that simile much further though, for the Product record is differently constructed to that of an Address record. It is split into codes. The three principal types are Graphic codes, Calculation codes and Material codes. These are in themselves split into codes, which we will call "subcodes". The number of subcodes per primary code depends on the type of the latter. Graphic codes, for instance, can have four subcodes. Calculation codes may contain six and the Material codes up to twenty. The descriptions of the primary codes are pretty well self explanatory – the Graphic codes are the codes in which the graphic data is held so that a screen drawing, such as is shown in Figure 1, can be redrawn at a later date. Obviously, there have to be Calculation codes. The price of wood, for instance, may be so much per metre, which will have to be multiplied by the number of metres being used. The Material codes contain descriptions of the materials to be used. Let us use the BROWSE command to look at a particular record description. There are four options in the Browse menu. They give you the option of viewing the graphic, calculation and material records, but there is an additional one for product definition. We will look at this first. It is, for the purposes of an overview of the database, the most informative, as shown in Figure 6. Figures 6-8 are screen prints, so you will need to ignore any prompts which appear. As you will see, on the top line at the right hand end, we are told what option we are in and the whole page is entitled with the product record number. The record descriptions follow. One thing that one has to get used to in this program is that when anything is not used and the space is normally occupied by a number, then zeros are inserted. Hence, if you look under Graphic codes, you will see that there is space for four, but only one is used. The reason for this is that we only have a single dimension product (length and height) in the window shown in Figure 1. It has been necessary to use three Calculation codes, however, and these have been allocated numbers 1, 2 and 3.

Eleven of the Material codes are used. These are shown a little differently to the Graphic or Calculation for the quantity of the material is also shown. Hence, four items of Material code 6 are used in this double glazed window. From this one screen, therefore, we have got

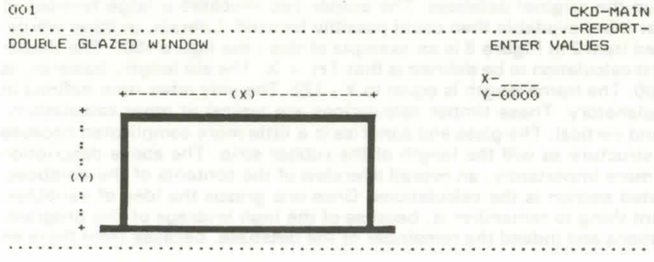


Figure 1

```
BILL OF MATERIALS

PRODUCT : DOUBLE GLAZED WINDOW

QTY DESCRIPTION                              SIZE

 1 TIMBER HEAD  2" X 4"                      5000
 1 TIMBER CILL  2" X 6"                      5100
 2 TIMBER FRAME 1 1/2" X 4"                  3378
 2 ALUMINIUM FRAME (HOR)                     4892
 2 ALUMINIUM FRAME (VER)                     3378
 4 ALUMINIUM "L" BRACKET
 1 TUBE SEALING MASTIK
 1 DOUBLE GLAZED GLASS UNIT           4878 X 3364
66 WOOD SCREW 1 1/4
 8 GALVANIZED NAIL 4 1/2 "
 1 RUBBER STRIP (METRE)                        17
```

Figure 2

```
STANDARD COSTS

PRODUCT : DOUBLE GLAZED WINDOW

 QTY DESCRIPTION                       SIZE               STD COST

  1 TIMBER HEAD  2" X 4"               5000                  13.62
  1 TIMBER CILL  2" X 6"               5100                  16.36
  2 TIMBER FRAME 1 1/2" X 4"           3378                  11.23
  2 ALUMINIUM FRAME (HOR)              4892                  30.53
  2 ALUMINIUM FRAME (VER)              3378                  21.08
  4 ALUMINIUM "L" BRACKET                                     3.28
  1 TUBE SEALING MASTIK                                       1.11
  1 DOUBLE GLAZED GLASS UNIT           4878 X 3364          298.65
 66 WOOD SCREW 1 1/4 "                                        0.53
  8 GALVANIZED NAIL 4 1/2 "                                   0.02
  1 RUBBER STRIP (METRE)               17                     3.06
                                                          --------
                                                            399.46
```

Figure 3

```
PROFITABILITY ANALYSIS

PRODUCT : DOUBLE GLAZED WINDOW

QTY DESCRIPTION                    SIZE           STD COST   RETAIL

 1 TIMBER HEAD  2" X 4"            5000              13.62    19.06
 1 TIMBER CILL  2" X 6"            5100              16.36    24.43
 2 TIMBER FRAME 1 1/2" X 4"        3378              11.23    16.34
 2 ALUMINIUM FRAME (HOR)           4892              30.53    50.97
 2 ALUMINIUM FRAME (VER)           3378              21.08    35.20
 4 ALUMINIUM "L" BRACKET                              3.28     7.28
 1 TUBE SEALING MASTIK                                1.11     2.07
 1 DOUBLE GLAZED GLASS UNIT        4878 X 3364      298.65   518.54
66 WOOD SCREW 1 1/4 "                                 0.53     1.32
 8 GALVANIZED NAIL 4 1/2 "                            0.02     0.08
 1 RUBBER STRIP (METRE)            17                 3.06    17.00
                                                  -------- --------
                                                    399.46   692.30
                                                  -------- --------
                                           PROFIT   292.84    73.3%
```

Figure 4

```
PRICE QUOTATION

PRODUCT : DOUBLE GLAZED WINDOW

QTY DESCRIPTION                    SIZE                RETAIL

 1 TIMBER HEAD  2" X 4"            5000                 19.06
 1 TIMBER CILL  2" X 6"            5100                 24.43
 2 TIMBER FRAME 1 1/2" X 4"        3378                 16.34
 2 ALUMINIUM FRAME (HOR)           4892                 50.97
 2 ALUMINIUM FRAME (VER)           3378                 35.20
 4 ALUMINIUM "L" BRACKET                                 7.28
 1 TUBE SEALING MASTIK                                   2.07
 1 DOUBLE GLAZED GLASS UNIT        4878 X 3364         518.54
66 WOOD SCREW 1 1/4 "                                    1.32
 8 GALVANIZED NAIL 4 1/2 "                               0.08
 1 RUBBER STRIP (METRE)            17                   17.00
                                                     --------
                                                       692.30
```

Figure 5

```
...................... PRODUCT RECORD - 001 ..............-BROWSE-

RECORD DESCRIPTION      DOUBLE GLAZED WINDOW

GRAPHICS CODES (1)  001 000    CALCULATION CODES (1)  001 002 003
GRAPHICS CODES (2)  000 000    CALCULATION CODES (2)  000 000 000

MATERIAL CODES (QTY/CODE)
   1 -001       1 -002       2 -003       2 -004       2 -005
   4 -006       1 -007       1 -008       QW-009       8 -010
   1 -011       ##-000       ##-000       ##-000       ##-000
   ##-000       ##-000       ##-000       ##-000       ##-000

.................................................................
HIT <ENTER> TO BROWSE ANOTHER PRODUCT RECORD
```

Figure 6

```
...................... MATERIAL RECORD - 001 ..............-BROWSE-

RECORD DESCRIPTION        TIMBER HEAD  2" X 4"

UNIT FACTOR                               010000
BUY  IN  PRICE PER UNIT FACTOR           0027.23
SELL OUT PRICE PER UNIT FACTOR           0038.11

CALCULATION VARIABLE (1)     TH
CALCULATION VARIABLE (2)     **

..................................................................
HIT  ENTER  TO BROWSE ANOTHER MATERIAL RECORD
```

Figure 7

```
...................... CALCULATION RECORD - 001 ...........-BROWSE-

CALCULATION DESCRIPTION      TIMBER CALCULATIONS

CALCULATION
         (1)     TH=X         :REM HEAD  LENGTH
         (2)     TC=X+100     :REM CILL  LENGTH
         (3)     TF=Y-122     :REM FRAME LENGTH
         (4)     ****************************************
         (5)     ****************************************

CALCULATION EXECUTION SEQUENCE        12345

..................................................................
HIT  ENTER  TO BROWSE ANOTHER CALCULATION RECORD
```

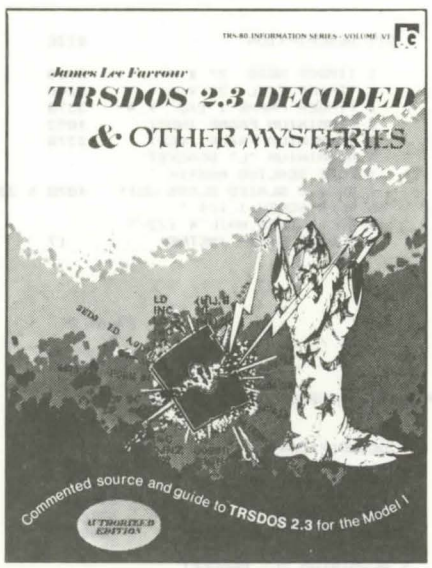
Figure 8

a pretty good idea how the Product record is made up, but the additional three options under the Browse menu will enable us to look into each category more closely. We will give one example of this, by selecting the fourth option, the material specification records. This is Figure 7. The top line is similar to Figure 6, except that we see we are now in the Material record, but we still have the same product number 1. If we glance back at Figure 6, we will see that only one Material code is used so only a single page screen is required. The item described in this case is a timber head. In other words, wood measuring 2" × 4". Following this is the unit factor. As we have mentioned above, there is only one of this timber head. The placing of the digit 1 in the row of zeros is significant in the calculations carried out by the program, which are transparent to the user. The next two items are self explanatory and are the cost and selling price of this item of material. There is only one calculation variable used and it has been allocated the name of TH for timber head. To recapitulate, therefore, we have in front of us a description of one of the items of material used in the construction of this double glazed window unit.

We should now turn to the Calculation codes because we have already mentioned the calculation variable and you may well be puzzled as to what this means. To do this, we go back to the Browse menu and select the third option for Calculation records, again selecting the one appropriate to the glazed window. It will be recalled from Figure 6 that three Calculation codes are used in this product. They are in fact timber calculations, aluminium calculations and glass plus sundries. Figure 8 shows a typical screen and, as you will see, refers to the timber calculations. The pages for the others are similar. Apart from the headings, you will see that it is divided up into five possible calculations. The word REM is short for remark and is a very short description of the calculation. In order to advise the program of the calculations that are to be done, it is, of course, necessary to use variables. Variables are merely letters to which are allocated values.

They are used extensively in all Basic programs and although they do not follow exact algebraic rules, they may be likened to an algebraic variable. Thus in programming and, therefore, in this program, one can make the variable A = 3, the variable B = 4 and if we enter into the program the expression C = A + B, then C will be given the value of 7. Very simple and very straightforward. It is really about all one needs to know about calculations in order to set up the original database. The author has allocated a large number of variables which are free to be used by the operator. There are far more available than could possibly be used. Literals, in other words, actual figures, may also be interspersed with the variables. Indeed Item 2 in Figure 8 is an example of this (the figure 100). The timber head length is the dimension x as shown in Figure 1. Thus the first calculation to be defined is that TH = X. The cill length, however, is a bit longer, hence the variable TC (timber cill) is equal to X + 100. The frame length is equal to Y - 122. The only other item defined in Figure 8 is the calculation execution sequence which is self explanatory. These timber calculations are typical of other calculations. There are only two for aluminium, namely the frame horizontal and vertical. The glass and sundries is a little more complicated because the number of wood screws used will depend on the size of the structure as will the length of the rubber strip. The above description should give you a good idea of the Browse option and perhaps, more importantly, an overall overview of the contents of the database. All of it is pretty simple and straightforward. The only complicated section is the calculations. Once one grasps the idea of variables, however, this also should give little difficulty. The most important thing to remember is, because of the high leverage of this program, once the database has been formatted, one can forget the calculations and indeed the remainder of the database, because from there on in, all will be done for you.
We are not going to deal with the remaining two options in the primary menu of the Edit program because they are entitled Delete and Update and are exactly that. The first removes a record and the second enables one to modify any part of it. Job Costing is a very nice approach to the subject. The use of a database enables the user to adapt the program to pretty well any trade or business. He has complete control over materials, the calculations, any graphics that are required and, finally, the product itself.

TRSDOS 2.3 DECODED AND OTHER MYSTERIES



Some of our older customers tell us that they can find out what we think about a program or product from the way that we describe it. It is a pity that we do not really know how this interpretation takes place because it would be useful to easily convey to our customers when a particularly outstanding product comes along. So much sales talk goes on nowadays that you cannot believe anyone. Hoping that we will be believed, we would like to say that this, in our opinion, is the best of the six ''Mystery Books''. Of course, you have to own disks or be interested in disk operation, to be able to use it. There has been a long history of disk operating systems for the Tandy and Genie machines upon which we have had occasion to comment from time to time in this catalogue. Sophisticated DOSes have stepped a little bit away from the original standard, but whichever way you look at it TRSDOS, is the basic standard disk operating system for the Tandy and, therefore, the Genie machines. LDOS in particular adds so much that it is hard to decipher the original TRSDOS influence, but it is there. If you understand TRSDOS therefore, then you have a very firm grip on disk operation for these machines. Furthermore as it is the basic skeleton which the sophisticated DOSes have fleshed out, it follows that with some extra work a thorough understanding of TRSDOS can be expanded to a thorough understanding of any disk operating system for these machines. James Farvour, the author of this new book, is also the author of Microsoft Basic Decoded and Other Mysteries. That was a fantastic book and we doubt whether there is anybody seriously involved with these machines that does not refer to it continuously. It did, however, have one big failing and that is that, for copyright reasons, it was unable to include the entire disassembly of ROM. Very kindly (and we feel they should be complimented for their foresight) Tandy have granted permission whereby TRSDOS 2.3 Decoded can list the entire Disassembly. The book consists of 300 pages. We doubt whether there is a single one that is not packed full of information to anyone interested in disk operation. Farvour has a nice style of writing. He seems to have the knack of being able to include sufficient detail to understand the subject but not so much that one gets drowned.
The book is divided into 10 chapters and two Appendices. Appendix 1 contains data structures and SYS0 entry points. Most importantly perhaps, after the data structures, are given cross reference lists for SYS0 to SYS2 inclusive. The second Appendix is a complete annotated disassembly of SYS0 to SYS6 and BOOT/SYS. The bulk of the book, that is to say the 10 chapters, are devoted from Chapter 3 to Chapter 10 inclusive to a close description of each SYS file and are liberally sprinkled with illustrative disassemblies. As we dictate this listing we have had the opportunity to go through the entire book and it seems to us the most complete treatise on the subject that is ever likely to be available. Generally, the chapters literally start at the beginning of the SYS file being discussed and then go through a discussion of it byte by byte. The first two chapters are general or introduction chapters. The first one describes the Model I hardware and then there are two or three pages of Z80 description. Operating systems are then discussed generically. Chapter 2 starts with an overview of TRSDOS and then arrows in, to tie up with the general information given in Chapter 1, to the particular applications of it to TRSDOS.
It is difficult to say what level of knowledge is required in order to assimilate this book. The Preface says that it assumes a knowledge of ''basic computer architecture and Assembly language program''. This is probably perfectly fair, but might downgrade the book a little. The commenting is so full and explicit that we are tempted to say, that so long as one knows, or has a list of the Z80 mnemonics, then the reader will get more than his money's worth.

UPDATES

FRENZY AND SEA WOLF

We fear that this is somewhat of a downdate rather than an update. Model III owners should be aware that the writing to disk of the highest score features in these two programs are not supported on the Model III. They are, of course, on the Model I.

IMAGE PROCESSING KIT

This is not by way of updating, but more by way of further comment on this product. As we made clear in the original description of it, the Image Processing Kit is made up of software designed to give a flavour of image processing for those who, in pursuing their computer interests as a hobby, are unable to afford the heavy cost of image acquisition hardware. Mike Cook, who is the expert on this subject and wrote the software in the Image Processing Kit, designed and built an image digitiser which digitises a TV signal in real time to a resolution of 128 × 128 pixels with 4 bits per pixel. This gives 16 shades of grey and produces a surprisingly good natural image for such low resolution. Mike is prepared to build such a digitiser but the price would be around £950. However, round about the summer of 1983 he is planning to make available a slow digitiser. This would produce the same resolution as the images in the kit from a standard vidicon camera. It will require about 2½ seconds to acquire the image. It will plug into the printer part of the TRS80 and best of all the present projected price is £130. We are not quite sure at the moment how this will be marketed, but we would be happy to forward any letters on to Mike from anybody that is interested.

POOLCAST

Poolcast has now been improved by the addition of an optional bias. Customers are referred to the catalogue entry for this program for discussion on the pros and cons of such a bias.

ANIMATE

Both the tape and disk versions of Animate have been updated. As far as the former is concerned, the fact that it was the user's responsibility to turn off the tape, apparently gave some customers cause for concern. The program has, therefore, now been modified so that the tape will switch off automatically. In the disk version one customer very sensibly suggested that it would be a good idea if the time allocated to a frame were displayed with the current frame number. This now has, therefore, been incorporated.

MODEM 80

Pretty well the only problem there has been with the Genie machines since Lowe's started to import them into the United Kingdom has been the interface to the RS232. This, in Tandy terms, is non-standard and hence everything that uses it has had to be modified. Unfortunately, the Genie (PMC as it is called over there) is hardly used in the United States, hence American authors are not particularly given to changing their software. In spite of this we have convinced Les Mikesell to modify Modem 80 for the Genie. This was only possible because we had got Logical Systems to write a driver for the RS232 interface running under LDOS. The Genie version of Modem 80, therefore, is only usable with the Genie running under LDOS.

LDOS

As far as we know, every customer that has had any interest in obtaining the RS232 driver for the Genie machines is now aware that the driver is available from us. Just in case there are any that have not received this information, RS232G is in stock. There is no charge.

CP/M

CP/M is now supplied on a double sided 8" disk so as to suit both the original Model II and Model 16.

DATA WRITER

Data Writer has now been improved by the addition of an entirely new module called Access. This is a program that allows the user to add or delete records and make changes in existing records in the database. It incorporates special search and scroll features for finding records and word processing features for editing. A powerful access technique called "two level sequential direct access" has been used to keep search times to a minimum. As will be seen from the above description, this new module replaces or adds on to both the present Entry and Edit Modules. Although not at present in stock, we understand from Software Options that the long awaited double density version of Data Writer will be available by the beginning of February. Data Writer at the present time does not respect HIGH$ in LDOS hence many of the LDOS advance features cannot be used with it. As Data Writer does contain a lower case driver, about the only feature which would be of assistance is the type ahead feature in LDOS. It is true, however, that some customers would gain advantage from using one or another of the Filters supplied in LDOS. It is not known as yet whether an update will be coming from Software Options that will respect HIGH$. One would assume that the double density version will have to and, hence, an update will be available. If either the double density or LDOS feature compatibility are important to customers they can check with us over the next few weeks.

BBC MODEL B

TRS-80 and Genie owners may be interested to know that we are now translating some of our programs for the BBC B Computer. If anybody knows a BBC owner who is good at his job, we are looking for translators. We have had a standard Agreement drawn up, by which the translator receives a royalty in addition to the original author. This is 10%. We are going to be rather tough on the subject, however, and prospective translators will have to show us that they know what they are doing.

ACCESSORIES

LIGHT PEN

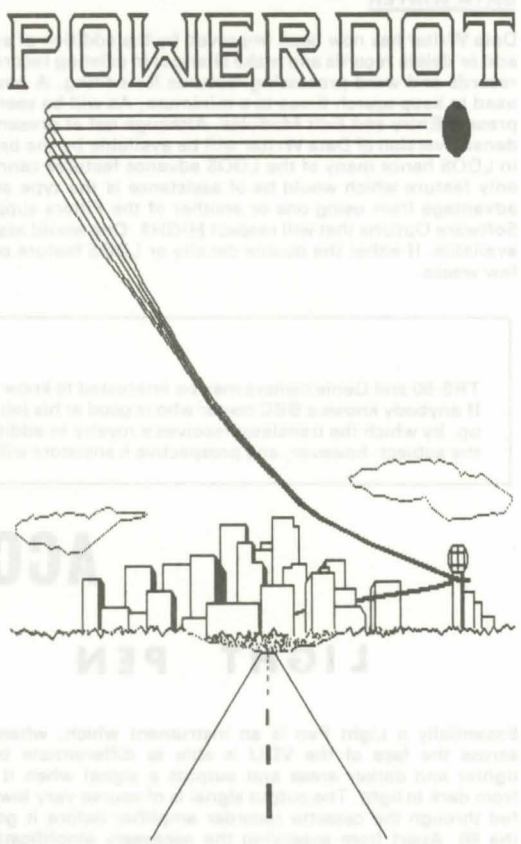
Essentially a Light Pen is an instrument which, when wiped across the face of the VDU is able to differentiate between lighter and darker areas and outputs a signal when it passes from dark to light. The output signal is of course very low so it is fed through the cassette recorder amplifier before it goes into the 80. Apart from supplying the necessary amplification this hook up is very convenient, as it is only necessary to connect the plug from the pen to the AUX jack of the recorder and connect an ordinary 9 volt battery to the snap connector of the pen, to be completely operational. The computer "looks" at the pen through Port 255, the cassette port. So it is only necessary to input from this port in your program, to see whether the pen is looking at light or dark areas of the screen. INP(255) will return 127 for no light and 255 for light, if the screen is set to normal size characters. If it is on double size the returns will be 63 and 191 respectively. The port may be reset with the number 4 and 12 respectively. This is of course, covered in the instructions which come with the pen. These, incidentally are full and give you everything you need but the duplicated production leaves something to be desired! They include various example programs and routines for incorporation in your own software. A cassette is also supplied with the pen which contains two games for which the pen is used to enter choices. This is of course, an obvious choice for an application — games which require an input. Something along the lines of replacing "Type the number for the choice required" with "Touch the pen to the selection required". Certainly adds a bit of class! In fact the applications for a light pen are pretty well only restricted by the extent of one's imagination. The pen is well made and is dust proof. The connections to the cable and from the cable to the AUX plug and battery snap are moulded for long life. We will be supporting with software in the future and would certainly like to hear from authors with programs written around the pen.

APRIL 1983 LISTING

POWERDOT – ANOTHER MAJOR PROGRAM FROM POWERSOFT

And major it is! Believe it or not the illustration is an untouched photograph of the output direct from an Epson printer. The definition is nothing short of miraculous. Before you get too enthusiastic there are, regrettably, two major restrictions. First of all your Tandy or Genie must have lower case; secondly you need an Epson MX80 dot addressable printer. This means an MX80 either with Graftrax, Graftrax Plus or the newer MX80 Model III. As a matter of fact there is a further restriction mentioned in the manual, namely that one should have the printer cable supplied by Epson and not the one supplied by Tandy. We, however, have found this not to be so. The illustration came off a printer which was connected to a Model I via a normal Tandy computer cable. We can only assume that there is some different type of cable in the United States. Finally, before leaving the subject of what you must and must not have, we should mention that Powerdot is a fantastically powerful program. Its use is straightforward and should not give anybody any problems, but you must read the manual through and fully understand the program before you start to use it. In a nutshell, Powerdot will produce some amazing results for you but you have got to use your head. Some computer users – and it is a perfectly viable and understandable attitude – just wish to switch the computer on, push the appropriate button and achieve a result. Powerdot will do this, but you will need to consider carefully which button you are going to push!

To reiterate, Powerdot supports the Epson MX80 with Graftrax or Graftrax Plus, together with the MX80 Model III. It also supports C. Itoh Prowriter 8051A. We have not come across this printer in England however, so that may not be of too much interest. Somewhere in the manual it mentions the Tandy dot addressable printers, that is to say the Line Printer 8, and the new DMP models. The important point, of course, is that the printer should be dot addressable. We have not tried these Tandy machines but hopefully by the time this gets to you we will have done so. Powerdot is split into two parts. As a matter of fact, Powersoft say it is modular and they give the two parts as examples, so one assumes there are going to be further modules added later. The mind boggles at what these are likely to do. Anyway, the two available at the moment are PDOT1 and PDOT2. Broadly speaking the purpose of PDOT1 is to construct the illustration or drawings, PDOT2 does the actual printing. Probably the first thing that will come to a customer's mind who is familiar with our catalogue is why Powerdot is being published when Powersoft already have produced Powerdraw. The answer is simple, Powerdot is high resolution graphics, Powerdraw has an amazing versatility but deals in normal resolution. Powerdot and Powerdraw are entirely different programs. There are some similarities but the differences far outnumber them. Reduced to its basic simplicity, the purpose of Powerdot is to produce a large number of different types of drawings, including high resolution, from one file. Indeed, the word "file" may be the key to the matter. All drawings generated by Powerdot come from a file. The design is constructed and automatically filed away on disk by the program. PDOT2 is then called to do the actual drawing.



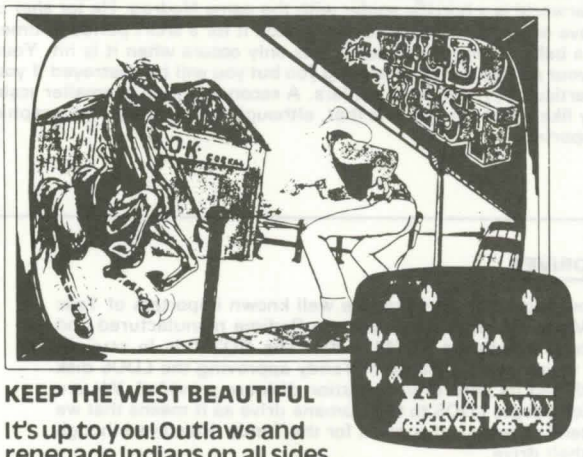
As we have said, PDOT1 is the module by which the drawings are actually composed. As with everything from Powersoft, it has a large number of options covering pretty well any contingency one can think of. Probably the most important feature is that one is not tied to the size of the screen. As we all know, the Tandy/Genie screen is 64 characters wide by 16 lines depth. With Powerdot this is the **minimum** size with which one deals. The maximum is quite immense, for the screen comprises a window on to the drawing. This window can be moved over the drawing sheet rather in the way that Visicalc can by way of its spreadsheet. If this is not sufficiently impressive, let us quote a few figures. Powerdot writes its files in blocks. One block can be considered as one screen height, in other words 16 lines. However, if the screen width is set to 100, then one block will be equal to 1600 bytes. If you set the width to 200 then one block will be equal to 3200 bytes. The printer will impose some restrictions. Your printer manual will have information on how many dots the printer is physically capable of printing per line. For instance, the MX80 has a maximum number of 960 dots per line. In Ultra-res mode, which is the highest possible resolution, Powerdot will produce graphics, the spacing of which in all directions is one half dot. This means that you could program each dot every half dot space. When one gets up to such proportions however, the capacity of your disk drive to hold the actual file will become important. For instance, in Ultra-res it would quite often be necessary to require multiple files for one drawing or, alternatively, use a hard drive system. The most common function of Ultra-res is to produce miniature graphics. Powerdot pushes the printer to the absolute maximum of resolution of which it is capable. At times your printer will be required to perform one dot feeds and multi line feeds accurate to one dot space. Such ultra high resolutions could, with some specimens of printers, start to give difficulties. To wind the statistics up, Powerdot is capable of cramming 1,500,000 user programmable dots on a single 64 line by 80 column page. To file that much data on a disk would require some 240 kilobytes of free space. However, not to worry, the average Powerdot file will be around 60K. These figures however do give us the absolute maximum of what Powerdot is capable of, namely 1,500,000 dots in a 64 line by 80 column page.

We will not go through the various commands that are available whilst composing the drawing. They are, to a large extent, quite normal. One departure is that the keypad is used for convenient line drawing. There are eight different directions in which a line can be drawn. Up, down, across and back, plus the diagonals, and the logical keys on the keyboard control the direction of the drawing in a logical sense. There is no doubt that customers who do not have a keypad will find some inconvenience here but the program will still work all right. Unfortunately the numbers along the top of the keyboard are hardly as logically placed as is a keypad. Rather as in the same way as Powerdraw, the angle of the diagonals can be changed and there are many other conveniences. The window, incidentally, is controlled with the arrow keys. Characters can be mixed with the drawing. There is a Character Edit mode. Again this is easy to use. Finally, as far as the actual composition of the drawing is concerned, we should mention the automatic draw feature. This enables the user to define two points on the screen and the program will automatically draw a line between them.

PDOT2 is, as we have said, the module in the suite which is used to make the actual printing. It has some six possible modes. First is to print ordinary block graphics that we are used to on the Tandy machine. Powerdot, incidentally, prints these regardless of whether the printer is normally capable of doing so. These block graphics may also be printed in bold mode. The third option is to print in ordinary dot graphics. In this mode the dot spacing will be one dot per dot space in all directions. The maximum width that can be printed will be half of the maximum allowed by your printer. In the case of the MX80 this means 240 dot width resolution. The fourth mode is the same as the third but in bold. The result, as a matter of fact, is little squares rather than dots and Powersoft in their manual say that they do not really recommend its use with a new ribbon. The fifth and sixth modes are high resolution and ultra high resolution. Dot spacing is one half dot, so you may print a graphic that is twice as wide as other modes in the same amount of space. The maximum width of the graphic in the case of the MX80 would be 480. Ultra resolution of course will produce the highest possible resolution. Dot spacing in all directions is one half dot. That means that you can program each dot every half dot space. As we have mentioned before, this resolution is so high that one runs into difficulties with disk storage space and it finds far more use in the production of miniature graphics.

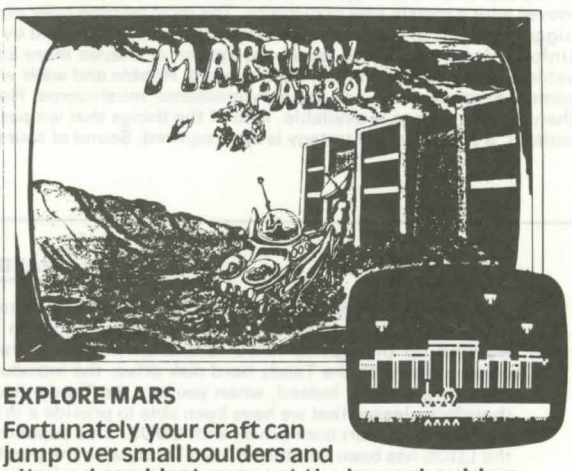
All in all a fantastic program. Obviously just disk orientated. It will not be everybody's cup of tea but if you need high resolution drawings it is fantastic.

NEW LINE



KEEP THE WEST BEAUTIFUL

It's up to you! Outlaws and renegade Indians on all sides. Even the train's been hijacked by outlaws with all the payroll on board. Can you clean up THE WILD WEST by Clifford Abrahams?

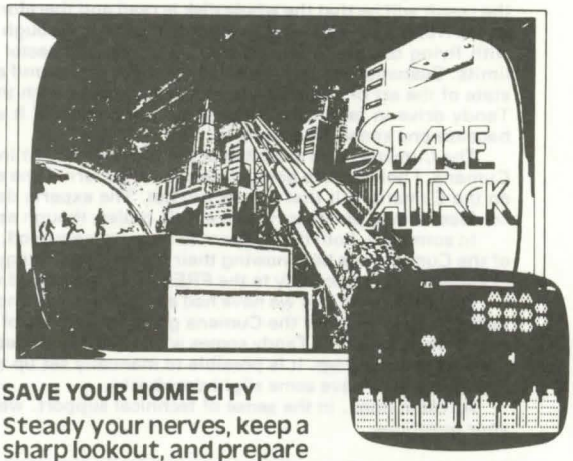


EXPLORE MARS

Fortunately your craft can jump over small boulders and pits and can blast away at the larger boulders. But watch out - the natives are not friendly. Join the MARTIAN PATROL by Rick Maurice.

DRIVE THROUGH THE NIGHT

Hostile competitors, oil slicks, wandering pedestrians and a treacherous raceway all combine to make this a real challenge. Roll your TRS up to the starting line for GRAND PRIX 80 by Rick Maurice.



SAVE YOUR HOME CITY

Steady your nerves, keep a sharp lookout, and prepare for battle. Fiendish aliens are all around, and if they destroy the city, you're next. It's a SPACE ATTACK by Clifford Abrahams.

This is a new departure for Molimerx. A number of young people are purchasing Genies, and still even Model I TRS-80's. They have an interest in low cost arcade games. We are therefore developing a new line of these and the above from Melbourne House represents the first four. If they prove to be of interest then we will extend the line, give it an "official" name and somehow separate it from the rest of our products.

One of the features of this new line will be that we will not be giving so much description to the programs as we normally do. Very briefly however, the Wild West program above is similar to Duel. The driving program beneath it is similar to our Racing Driver, but is better we think. The Space Attack is pretty well self descriptive and is another space shooting, bomb dropping game. Martian Patrol is a shooting game, but one is trying to travel over the Martian surface at the same time.

INVADERS FROM SPACE – FOR THE COLOUR GENIE

This is a space invaders game variations of which are described elsewhere in the catalogue. We are told that it is very close to the arcade one. Colour is emphasized in a very attractive display. Three laser bases are provided at the beginning and sound is, of course available through the television. The game is fixed in the sense that the parameters cannot be pre-selected.

SYSTEM TAPE COPIER – FOR THE COLOUR GENIE

This is a straightforward system or machine language copier. Several are described elsewhere in the catalogue. It will duplicate any standard SYSTEM tape up to a length of about 15K. Provision is included for verification which is, of course, a big advantage because it enables the user to be sure of his data validity from start to finish.

ASSAULT – THE UNDERWORLD AWAITS!

This is another program from Computer Shack with their usual excellent quality of graphics. Like previous programs it features wrap around graphics, but in Assault the scenario is entirely different to previous offerings. You have two tasks, the first is the protection of six bags of gold. Of equal importance, however, is the destruction of numerous creatures attempting to steal your gold and/or assault your vehicle. The action takes place in an enormous array of underground caves. Some are already clear of walls and debris but more often than not this is not so and you will have to blast anything that stands in your way. There is a "creatures pit" which contains a whole cast of different types of creatures. They will enter the cavern one at a time (thank goodness) from their unreachable pit. Each one moves with a certain rate of mobility. The most terrible ruler of the underworld is a horrific spider with the name Nodrog. He (or she) is bigger than any of the other creatures and it cannot be killed by your wave cannons, although these do stop it for a short period of time. Unfortunately it may well lay a baby spider, or maybe more correctly a baby Nodrog, but luckily this only occurs when it is hit. Your vehicle is able to roll over any clear ground. Rubble and walls will stop your motion without harming you but you will be destroyed if you come into contact with any ordinary creatures, mushrooms, Nodrog (particularly), and baby spiders. A secondary map of smaller scale than the normal one is available. One of the things that we particularly like about the game is that, although it has a very high graphic content, a great deal of strategy is also required. Sound of course is supported.

HARD DISK DRIVES

By the time you read this in print it should be common knowledge that Cumana (the well known importers of Teac drives) now have available a line of hard disks for the Tandy Model III machine. These are Rodime manufactured and working up through 5, 10½, 15 and 21 megabyte they are code numbered RO201 - 204. The RO201 is in straight competition with the Tandy hard disk drive, the introduction of which was the cause of Tandy approving the LDOS disk operating system. Indeed, when you buy the Tandy drive, LDOS and its hard drive initiation disk are provided. We are therefore pleased that we have been able to provide a driver which adapts LDOS to the Cumana drive as it means that we are able to support both drives with LDOS. This support will extend to technical support for the Tandy drive even though the LDOS has been purchased from Tandy with the purchase of their drive.

It is, of course, not part of our business to review hardware but as hard disks are to some extent a new innovation for the TRS-80, we thought you might be interested in our experience with both the Cumana and the Tandy drives. Fortunately for us, being stuck in the middle, we have nothing but good to say for both. We have had them both running here for sometime and have had no problems at all. Mr. Dibben was kind enough to adapt his Prozap program for hard disk use. I hasten to say that this is only in the prototype stage at the moment and, although I am sure we will be releasing a Hardzap later, we are not able to do so at the moment. Anyway, one of the tests that Hardzap will do is to search for a word through a disk until it is found. If the string is made to be an impossible one, then of course it never does find it and the result will be that the whole disk is read and therefore verified by the program. To do this is a highly demanding test of any drive, but at the rate that a hard drive nips through the reads, it is little short of dramatic. Both drives came through with flying colours, although there was one bad sector on one side of the Tandy platter. This, of course, is well within limits. Customers who are purchasing these drives and are not familiar with hard disks, must get used to the idea that the state of the art of manufacture at the moment is such that hard disks frequently have one or two sectors locked out. The Tandy drive in fact has a notation on the bottom of it as to what sectors are problematical. This is rather a good touch because one knows where one is.

The Cumana drive available at the moment will fit into a disk drive slot on the Model III. The Tandy drive is external. Cumana, I believe, are going to release an external one and, may have done so already. I think it is a fair comment to make on the Cumana unit that it does run hot. The experts down at Cumana assure me the heat is within tolerance, but I must confess I would prefer to have it a little cooler, though as indicated above it has certainly not caused any problem.

In summary, both drives seem to be extremely good. Obviously they are expensive. At this time I do not know the price of the Cumana one but knowing their marketing strategy I am sure it will be somewhat less than the Tandy one. The thrill of seeing that magic reply to the FREE statement could well be worth the cost!

One final thing that we have had a number of telephone calls on recently; the drives can be segmented pretty much as desired. The driver for the Cumana gives the options of two or four segments per drive. In other words, two logical disks per drive or four. The Tandy comes with a DO file. It sets up four logical disks per drive. The DO file is a very convenient method of setting up. It is possible to manually set up to other configurations, but without going into technicalities, this procedure does have some slight drawbacks.

As mentioned, in the sense of technical support, we are supporting both drives so we will be quite happy to answer your questions.

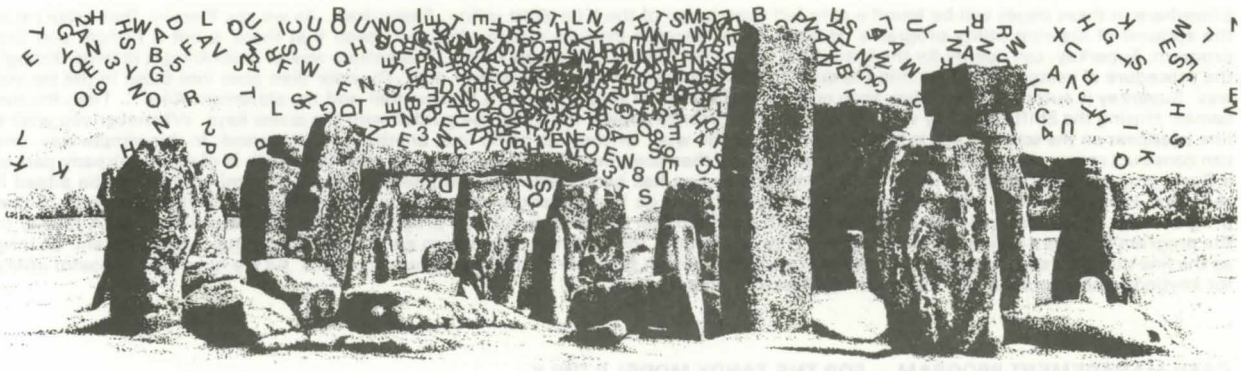
SUPER SCRIPSIT DRIVERS – FOR THREE PRINTERS

This package is the long awaited drivers for Super Scripsit, the enhanced Scripsit word processor from Tandy. The drivers are for the Epson MX80 (with Graftrax), C.Itoh 8510 ProWriter and the F10 Star Writer. The last two of these printers are not well known in England; we have brought over from Powersoft a small stock of the drivers for them and we would recommend that anybody who is interested in one should telephone us first, because the features available are slightly different to those that we are about to describe for the Epson.

As we have said, Epson owners must have Graftrax. The program was released just prior to the issuing by Epson of the Model III MX80, so we are not as yet sure that the package will be compatible with that printer. Funnily enough they do not seem to have heard of the Epson III in the United States, so it must be a machine that is only sold in the U.K. Anyway, we have such a printer here and we will be testing the driver out with it. By the time you receive this, we should have an answer. We can think of no reason why it should not be compatible.

As an added bonus, on the disk are patches to adapt Super Scripsit under LDOS 5.1.3. On page 69 of the Super Scripsit reference manual is a list of the System Print Codes. Not all of these are available with the Epson printer due to hardware differences. For information as to what is and what is not, the Epson printer manual should be consulted. The following is a list of the System Print Codes and what they will do on the Epson when using the drivers provided in this package.

CLEAR and –	toggles underlining on/off
CLEAR and =	toggles **italics** on/off
CLEAR and +	toggles double-strike (boldfacing)
CLEAR and /	GRAF/CTL and GPLUS/CTL: toggles overstrike on/off GPLUS2/CTL: toggles **emphasized** printing on/off
CLEAR and .	GRAF/CTL: toggles **emphasized** printing on/off GPLUS/CTL and GPLUS2/CTL: sets subscribing mode
CLEAR and *	GRAF/CTL: ignored GPLUS/CTL and GPLUS2/CTL: sets superscript mode
CLEAR and >	Ignored by all three drivers (the Epson cannot perform a reverse line feed)
CLEAR and ?	Pauses printout



LEAVE THE STONE AGE BEHIND!

MACHINE LANGUAGE
BUSINESS SOFTWARE

SYSTEM II

FOR TRS-80 MODEL III

FAST - NO FILE HANDLING! **FULLY INTEGRATED!**

STOCK CONTROL	AVAILABLE NOW
SALES LEDGER*	AVAILABLE NOW
PURCHASE LEDGER	AVAILABLE 15/6/83
NOMINAL LEDGER	AVAILABLE 15/8/83

*** INCLUDES INVOICING AND STATEMENTS**

The above is a reproduction of an advertisement which will shortly start to appear in the computer magazines. It constitutes, we feel, a landmark or breakthrough in TRS-80 software in that, to the best of our knowledge, it is the first business or accountancy suite of programs that have been specifically written for the Model III, in machine language.

This approach enables the user to take advantage of the speed of the language and free himself from the drawbacks which Basic file handling would otherwise impose upon him. Indeed, in System II there are no files as such! Machine language programs are obviously different to Basic programs, but do not be misled into confusing pure machine language with compiled Basic which, although it appears to be machine language, is in fact still subject to the restrictions of the original Basic source code. As this list goes to press a full brochure is being prepared which describes the four programs, the first two of which are on the point of release and the second two are scheduled for June and August 1983.

System II requires a great deal of explanation and customers who are interested are urged to request the descriptive brochure, as it is quite impossible to describe the suite in these pages.

One final thing we would like to emphasize is that a large number of sales ledgers do not include provision for integral invoicing, although most of them provide for statements. System II includes the generation of invoices and statements within the Sales Ledger program.

SUPERKEY – DRAWING AID

Elsewhere in these pages will be found a very full description of the Kim Watt utility, Powerdraw. As we say therein, that program is the epitome of drawing utility programs. However, just because there is a King does not mean that there is not a Prince, and this program, Superkey, can qualify for the latter title. It is a very useful, but simple utility. The easiest way of describing it is to go through the procedure of using it. The first thing to do is to load Superkey either from tape or disk. The user then goes into Basic in the normal way. Superkey is automatically active, so in order to use it one can simply type in a line number and the statement A$ = ''. Then the fun comes. Hitting the Shift Enter key will cause an active cursor to appear which can be guided with the arrow keys. Whenever you wish a line to appear on the screen a key is pressed; whenever you wish for there to be no line, another key is pressed. In this simple way, one can construct reasonably complex designs. Superkey will then compile this design into a packed string which is of course already part of a Basic program (allocating a line number). Once the design has been made and compiled, other programming lines can be added if required. Indeed, one can load a normal Basic program, then go into Superkey and add the design from the keyboard as part of that program. An added feature is the ability to CSAVE an individual design line out as a program for future reference or use. A facility in the program enables a resident Basic program to be blocked off, the loading of the design and then a re-opening of the program. So long as the line numbers do not conflict, one can thereby add a design to pretty well any program you want. As we have said, a useful utility for anybody who wants the one, but important function, that it offers.

CASH MANAGEMENT PROGRAM – FOR THE TANDY MODEL II ONLY

This program is designed to enable the easy management of expenditure and income in a business. Facilities are provided for the convenient entry of transactions, including an automatic VAT calculation. A system of keywords for subsequent analysis can be defined by the user. Once the Accounts file is established it can be listed, analysed or summarised to the screen or the printer, with entries selected for inclusion by date or item. A rather nice touch is that the file can be sorted into date order if this is required. The program is menu driven. In addition to the normal exit, seven choices are offered as follows:

1. New Entry
2. Lists and Totals
3. Change Entry
4. Display last 10 entries
5. Balance the ledger
6. Sort the file into date order
7. Change headings or analysis codes

The basic entry consists of seven items plus the analysis code. This is the one that will have been allocated by the user. The codes are constructed under the seventh option of the menu and in normal use, of course, these have to be set up prior to making any entry. The first item of the entry is an item number; the second is the date; the third a description which may be anything between 4 and 24 characters long; the fourth is the net value of the transaction, in other words the VAT exclusive value. As this program is for cash management it covers both income and expenditure. If an entry is an expenditure, then the net amount must be preceded by a minus sign. The next item is the VAT percentage, which is self explanatory, and finally the last column is for the gross amount. Extensive error trapping is provided in this entry routine.

The second option in the menu is for lists and totals. There are four ways that this may be carried out, two for the screen and two for the printer. You may choose a display, either by summary or by list. A summary, for instance, will produce a display showing totals in the various headings nominated for analysis and finally totals at the bottom. The alternative option is for a total list, which is just that, and will reproduce the entries as made. In summary therefore, one can either report on the screen selected items in accordance with the analysis codes or a complete, or total, list of them. The format available if you choose a hard copy is similar as for the screen. In the case of the first method, the selection technique used is exactly the same. The alternative format is a wide, full analysis printout of selected entries. The number of columns that you can print will be dependent on the column width capacity of your printer. The program comes set for 12 CPI but the program can of course be changed by editing.

The next option of the menu, namely to change an entry, is self explanatory and enables you to edit incorrect entries.

The fourth option will display the last 10 entries made in the file and a number of sub-options are available in order to display the list. Of most interest is the ability to file search for any specified string of characters.

When the Balance Ledger option is selected, the file will be totalled and the gross, that is to say the VAT inclusive balance, will be displayed. A note of the amount of VAT included in the total is also shown. The principle use of the Balance Ledger option is end of day use, for in many applications a positive gross balance should be represented by the amount of cash in hand.

The penultimate option is included so that printouts can have their entries in date order.

The final option is the utility used to define or re-define the headings under which entries in the file will be analysed in the reports. The option is also used to change entry codes.

One of the principle advantages of this program is its ability to be used with different types of small businesses. As we have described, it is purely a cash management program, although in some ways it is not unlike a nominal ledger.

ACCOUNTING TRAINER – A PACKAGE

We call this program a package because a large part of the training is actually carried out in the 30 odd page manual which accompanies the software. The package is intended as a trainer for students learning the skills of Chartered and Certified accountancy. In particular they are aimed at the student of any of the following courses on book-keeping, or general computer use, R.S.A., Union of Educational Institutes, various 'O' level examining boards, B.E.C. ordinary Certificate in both Book-keeping and Data processing. In addition to these, the program will be ideally suited to the new M.S.C. courses on Business Computing starting in a large number of technical colleges around the country.

The programs can be used in a variety of ways:

1. As an instructional exercise using the manual and test program, or the manual and model accounting program.
2. As a generator of test or homework exercises, to be either marked on the computer, or marked using computer generated answer sheets at the teacher's discretion.
3. It can also be used as a small accounting program in its own rights. The type of final accounts so generated are limited, but sufficiently thorough for most small firms, or the level of book-keeping mentioned above. There is the option to produce hardcopy of almost all stages of the program, (see samples) the flexibility to produce either all or part of a given accounting sequence again adds to its possible uses as practice material either on or off screen. In addition the hardcopy gives a useful addition to the course work collection of the student of book-keeping and/or data processing courses.

The following fixed accounts are available:

1 Cash Account
2 Capital
3 Drawings
4 Premises/Fixtures/Fittings
5 Vehicles
6 Debtors
7 Stock
8 Purchases
9 Wages
10 Sundry Expenses
11 Lights/Rates
12 Cash in Hand
13 Bank Account
14 Closing Stock
15 VAT
16 Creditors
17 Sales
18 Travelling
19 Returns Out
20 Returns In
21 Discounts Allowed
22 Discounts Received

The instructional part of the program includes credit sales/purchases, discounts and returns. It is divided into five sections, any one of which can be used independently of the others.

LDOS QUICK REFERENCE CARD

This long awaited card is now available from stock. It is an extremely high quality product consisting of no less than 10 double sided panels, concertina folded on thick glazed card. Unfortunately this quality carries its usual penalty, as you will see from the price list.

TRS-80 MODEL III USERS GUIDE

This is another book from John Wiley and Sons who have provided so many books on the TRS-80 machines. The book makes no secret of the fact that it is to a large extent a reiteration of the Tandy manuals. Its concept is that the manuals are instruction books and, as such, not very digestible, whereas the book is written in such a format that it is intended to be read straight through. It starts off with Chapter 1 literally assuming that you are unpacking your Model III computer. For some reason, which we do not quite understand, the book assumes that all Model III machines have disk drives, hence if you have a Model III without disk drive you would be well advised to skip this book.
The book is not outlandishly expensive and does provide a more digestible form of input than does the manual. On the other side of the coin, we have never had any particular objection to the Tandy manual.
The first chapter commences with starting up the machine and making a backup. The second chapter goes through a number of TRSDOS utilities. The third, fourth and fifth chapters deal with the Disk Basic. Chapter six reverts to backup and formatting and chapter seven explains file operations as they apply to TRSDOS. Chapter eight is concerned with the printer. This takes us to a little way over halfway through the book and the remainder of it, in the majority, deals with three Tandy programs, namely Scripsit (the older version we think), Visicalc and Versa-File. If you have no interest in these programs, then this part of the book is useless to you. The final chapter is concerned with communications programs. Unfortunately they concentrate on American ones, many of which are not available, nor have their counterparts, in this country.
In summary, we neither recommend nor decry this book. To a number of people it would have no purpose, as it is at least in the first half, a reiteration or paraphrase of the Tandy manuals.

UNDERWORLD

This is now available on disk as well as tape.

HINTS AND TIPS – APRIL 1983

The most important point this month is yet again the old problem of the cable between the Tandy keyboard and interface. This time, thank goodness, we have a solution rather than a statement of problems. Dr. J. Crease told us that suitable connectors are available from Farnell Electronic Components Ltd., Canal Road, Leeds, LS12 2TU; telephone 0532 636 311. We sent for some connectors and after fitting them, our life is a very great deal easier. They really work. Obviously the machines in the office here are used continuously but I do have a Model I which I use intermittently at home and without exception this gives me problems when I fire it up after it has been sitting around doing nothing for a few days. Every time I have gone to use this computer since fitting the connectors I have had no problem whatever. I would recommend that you need only instal the connector at the keyboard end. I do not know why this is so. I think I am right in saying that the expansion interface printed circuit board is not plated, so one would expect problems at both ends. Perhaps the best procedure would be to fit the connector at the keyboard end and see if this gets rid of those funny Disk I/O gremlins. If it does, so be it. If it does not you can always get another set. For fitting at one end only, the parts required are a 40 way ''mounting header with latch'', part number 145 022, price £2.22, plus a 40 way ''socket connector with strain relief'', part number 145 006, price £2.01. Both of these prices are exclusive of VAT and postage. We telephoned the order desk at Farnell and they tell us that these parts are (subject to the normal stipulations) always ex-stock. We have advised them that we will be inserting this notice in the catalogue and they assured us that they will order additional stock. An important question is the degree of skill required to fit these components. The true answer to this is – some but not a lot. Absolutely imperative is a very fine soldering iron plus some fine solder. As a matter of fact I found the soldering of the male socket to the board the least worrying part of the exercise. The female plug fits on the cable and it is a crimp fit, if that is the correct terminology. What happens is that there is no soldering involved, the pins go straight through the flat cable, making contact with the wires as they go. The nail biting part of this exercise is that the little spikes must be aligned exactly or they are not going to make contact with the wire. There are, of course, machines to do this but I found an ordinary vice did the job without any problem. In fact I think I probably worried more than was necessary. I did three different cables and they all worked fine. One word of caution, Tandy officially take the line that if you open up the keyboard then you void the warranty. I am not at all sure that this would hold up in a Court of Law, particularly as the equipment is being opened up in order to rectify a deficiency in the original design. However, customers should be aware before they carry out the modification of this possible problem.
One of the most difficult problems for a software house in answering questions on programs is the amount of such support that one can give to communication or terminal programs. As you know, the purpose of these is to enable the user to communicate with another piece of hardware of one sort or another. Unfortunately, by its very nature this cannot be duplicated here. When somebody rings up and says that Smart Terminal does not work when it is trying to talk to an IBMnnn, we clearly cannot duplicate the precise procedure used. We therefore particularly welcome letters from customers on this subject and I am indebted to Mr. I. W. Strang of Glasgow for two letters in which he recites his experiences with the RS232 Genie Driver in LDOS. Specifically he has sent me two pages of the procedure for copying ASCII files from the Genie to an RS232 device and vice versa. I am quite happy to send copies of these on to any customers who are interested in this subject.
Mr. D. F. Roberts, of that beautiful town Cirencester in Gloucestershire, sent me a patch for enabling single drive owners to use the REPAIR utility in LDOS. The patch is as follows:

```
. Patch to force LDOS Repair utility to run on single drive.
D00,6D=C0 53
D02,23=D5 E5 21 10 54 CD 67 44 CD 49 00 FE 0D
D02,30=20 F9 E1 D1 CD 8F 47 C9
D02,6E=01 2D 10 54 0A 0A
D02,74="Press <ENTER> when target disk installed"
D02,9C=0D 02 02 00 52
```

PERCOM DATA SEPARATOR

The Disk Controller chip inside the TRS-80 Interface carries out its own internal separation of the data pulses from the clock pulses. This is not recommended by the manufacturer of the chip and is the cause of the common difficulty of "hunting" when a format or backup gets to the inner tracks. It is also the cause of many CRC Errors. Both problems are even more common with 77 track drives. For some time we have advocated the use of the Percom Data Separator which is a small printed circuit board which simply plugs into the socket previously used by the Disk Controller chip. As higher density drives are now far more common — even the Tandy ones now can go to 40 tracks — we are now stocking the Separator.

MAY 1983 LISTING

£250 REWARD

Below you will find described a new program entitled Enigma. It is a true simulation of the German wartime cypher machine of that name. It will encipher messages which may be communicated to third parties by any means who, assuming they have the key, will be able to use their Enigma program to decipher.

We will pay the sum of £250 to anyone [who has purchased the program] who can demonstrate an infallible method of deciphering the coded message supplied in the program's instructions. We consider Enigma to be the best program of its kind on the U.K. or U.S. market; contestants may therefore use any orthodox means to crack the code, including microcomputer programs other than Enigma.

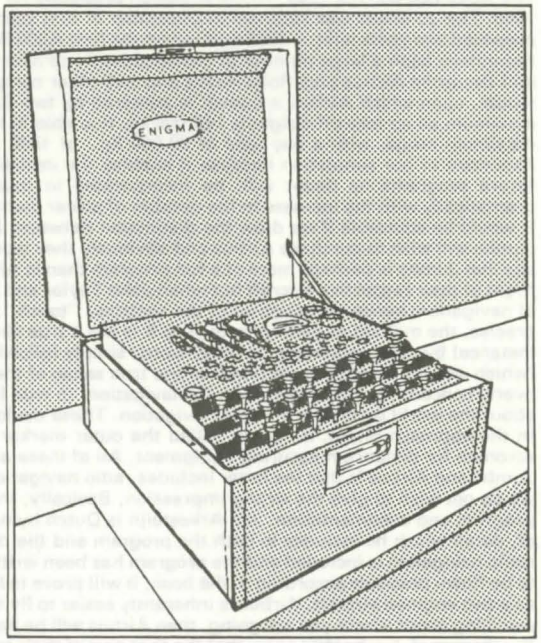
The original message and keys will be lodged with our Solicitors for safe keeping in a sealed envelope. In the [hopefully] unlikely event that the code is cracked by more than one person, the reward will be paid to the first customer who demonstrates to us that he has succeeded.

MOLIMERX LTD.

ENIGMA — SIMULATION OF THE WARTIME CYPHER MACHINE

Enigma is a precise simulation of the machine of the same name used by the Germans in World War II to encipher and decipher communications. Before we give a brief history of the machine let us mention the end result of using this program. It will produce coded text similar to the illustration. As you will see, after enciphering, the text is in groups of 5 letters. The program will also of course decipher text, but various items of information have to be known before this can be done. Suffice it to say, at the moment that Enigma will produce text which is about as close to being uncrackable as you can get. As a matter of fact, the British Government during the war did crack the code (although it might well be said that they cheated a little in the process!) so more truthfully it is probably better to say it is very difficult to crack.

This program is offered for two markets. First of all those customers who like a complete and accurate simulation of a complex function or who like to play around with codes and coding. Secondly, customers who have a real need for exchanging fully protected communications. In this day and age it is becoming increasingly important for even small companies to communicate with other entities in a secure manner. So long as there is a TRS-80 or Genie microcomputer at both ends, and the program is owned by both stations, then code generated by the program may be exchanged at will and by any method which will accept written input. In the disk version, coded messages may also be exchanged on disk. Perhaps the most likely pipeline that comes to mind is the Telex. Subject to the provision of a machine and program at each end, companies who can communicate by Telex may exchange information with complete confidence as to security.



As we show in the illustration, Enigma is quite a small machine and fits into a wooden box. This normally measures about 18 × 28 × 34 centimetres. We say normally because there were a great number of different versions of the actual machine. This is not surprising because it first went into use in the 1920s with the German Navy. The German Army adopted it in 1929. Basically, the machine consists (in the form which is simulated in this program) of four sections. Firstly, 26 keys, one for each letter of the alphabet. They will be seen at the front of the illustration. Behind this keyboard are 26 round transparent windows upon which are embossed the letters of the alphabet. When a key is pressed then a bulb behind a window is illuminated and this of course displays a letter. The Enigma machine operates on the principle of exclusivity, hence it is important to note that the window which lights does **not** correspond to the key which has been pressed. The third section is the electro-mechanical enciphering mechanism which lies at the back of the machine. In the illustration behind the window three wheels can be seen protruding from the case. Three rotors are connected on a single shaft which rotate when a key is pressed. The actual mechanism is quite complicated and is beyond the scope of this description. The fourth and final section of the machine is the "steckerboard" or cross plugging board. This is usually situated in the lid of the machine and is not shown in the illustration. It is of little or no importance in the computer simulation. There are many books on the subject. In particular, on the mechanics of the machine, "Intercept the Enigma War" by Jozef Garlinski, published by J. M. Dent is very good. Eric Huggins, who wrote this program, based his research on "The Hut Six Story" by Gordon Welchman. As Welchman was in charge of the team (Hut Six) which broke the code, his book is probably the best all round description of the project and the machine. Actually, Mr. Huggins has included in the program some of Welchman's suggestions for improving the machine.

The previously mentioned wheels may be adjusted as required. Thus they may be set as AAA, ZZZ or anything in between. In the program there are two keys. The first consists of four numbers. The second is a word or phrase of at least 25 letters. If one knows the wheel settings used to encipher and also knows the keys, then the program will decipher the correct message. Any incorrect wheel setting or character in the keys will cause garbage to be generated.

It is hard to give firm statistics for Enigma. Mr. Huggins says that the key may be chosen from a total of 2,367,000,000,000,000,000,000,000,000,000,000,000,000 possibilities. On the other hand, Garlinski says that the 26 contacts of one rotor disk can be connected to the contacts of just one other disk in 403,291,461,126,605,584,000 different ways. I think all we need to know is that the permutations are great!

In use during the war, the rotor settings and word key were changed every day. Each day this information was fed into the Enigma machines used by the Signal Corps throughout the German Army and Navy and any incoming messages were thus deciphered. There is a fascinating history to the method used by the English to crack the Enigma machine. In fact the machine had been on the market quite openly for a long period before the war and, although one would have thought therefore that it would be easy for the British Intelligence to get a machine, it actually proved to be quite difficult. A quantity of background information is given in the program manual.

Somewhat paradoxically, the use of the Enigma program is extremely easy. If one is enciphering, then the operator sets the wheels, inputs the keys and then the message. The computer then generates the code. In deciphering, precisely the opposite course is adopted. Output is to screen or line printer, also to disk storage. Input is from the keyboard or a disk file. The program is compatible with both disk and tape.

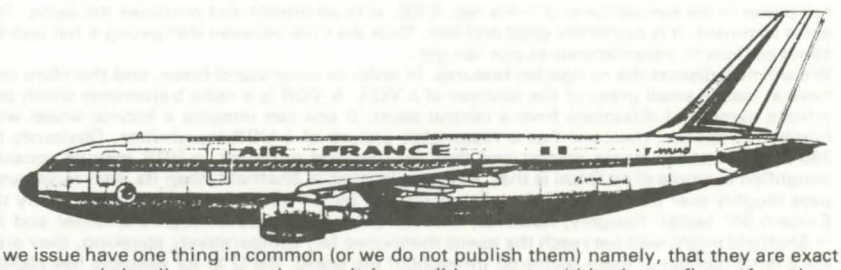
Enigma is a fascinating program. It has the rare attribute for a microcomputer program, in that it fulfills a professional application, but also provides a great deal of fun and enjoyment for the person using it as a hobby or as an amateur crytographer.

```
IF YOU WERE THE ONLY GIRL IN THE WORLD THEN I WOULD BE THE ONLY
BOY.NOTHING ELSE WOULD MATTER IN THE WHOLE WIDE WORLD.

CCCII WQHJC SUTFY YGKKM VBKEV UWRZO CURZH AWPQG HOWTO NJLQI
SKJCE YOWJH VGHAA YHDVD KGCWO SAVJL UNOBK SIMTH HVPEY WTTSC
PSTPK WZYAC FIQUW RJJRL TRVQK XOBWZ WKCRA SLHFQ CZOAQ JZZXX
```

The same text clear and coded.

AIRBUS – A SIMULATION OF THE A300



Before we launch into a description of this program we would like to make one point. Since we first released Jumbo, very close to a year ago, there have been one or two programs issued by other software houses of a similar nature. We have not used these and we do not know how good or bad they are. No doubt they are perfectly good, but we wish it to be clearly understood that the simulations that we issue have one thing in common (or we do not publish them) namely, that they are exact simulations of the aircraft or space vehicle concerned. In all ways, as close as it is possible to get, within the confines of a micro-computer. Thus Jumbo is a precise replica of flying a 747. Shuttle is as close as one can get to flying the Columbia space craft and this new simulation Airbus is a very precise simulation of flying the Airbus A300. Shortly we will be releasing another simulation and that will follow on in the same tradition. We thought that we should clear the air on that point because it is very easy in this business to take somebody's idea and write another program based upon it. Obviously such a program may be an improvement but more often it is not. It is our intent to continue this line of programs. In all cases the simulation will be as precise as possible and, for those people who are particularly concerned with graphics, this line of program will not use valuable memory space in order to display graphics of the outside world. As we have said before, large aircraft, and of course space vehicles, are not flown with reference to the outside world, they are flown on instruments.

The A300 was born in 1965. The first design proposals for it were put up to the British, French and German governments in October 1966. The go-ahead was received in December of that year. However, the present A300 in use, stems from a modified A300 B design, proposed two years later in 1968 and in fact the first A300 B-1 aircraft first took to the air on the 28th October 1972. As with all jet liners, there have been a large number of modifications and new models. The original airframe partners were Aerospatials, Hawker Siddeley and Deutsche Airbus plus Rolls Royce and two other companies for the power plants. Fokker & CASA joined the program later. The model, upon which Airbus is based, is powered by two General Electric CF6-50C2 Turbo fans, with a maximum seating of 330. The maximum all up take off weight is 140,000 kg. It is able to land and take off on a comparatively short runway — 5,600 feet — and has a maximum range, with a pay load of 30,000 kg., of 1500 nm. The A300 is, of course, a twin engine aircraft and this is particularly important to our simulation because it enables the inclusion of a random engine out emergency situation. Although this can, and in future programs no doubt will, be incorporated in four engine aircraft, the complexities of such emergencies increase rather dramatically with the increase in the number of power plants.

It would be advisable if we draw the distinction between Jumbo and Airbus, for a number of customers who have ''learnt flying'' on Jumbo will wish to purchase Airbus and obviously they would like to know the differences. Perhaps the best way to describe them is to say that Jumbo is perhaps more of a fun program than is Airbus. Once again we emphasise that they are both precise simulations of the flight of their respective aircraft but when John Taylor and Frank Avery wrote Jumbo, they deliberately kept out of it the complications of navigation; hence, although all of the controls, ''touch'', procedures and other matters regarding the actual flying of the aircraft are precise, the method of getting from A to B is not a true simulation. Pilots of Jumbo essentially travel from London to Birmingham (for instance) by dead reckoning. In other words simply following a compass bearing. Thus the intrepid new pilots who purchased Jumbo (which was the first flight simulator in the true sense of the word) were able to concentrate on the enjoyment of flying a big jet without overly concerning themselves with its navigation. In true life all large aircraft, and in fact nowadays most small aircraft as well, travel about the world by means of radio navigation. These devices take a number of forms. The most commonly used is the VOR or Omni. In the approach phase, a beacon called the outer marker is used at all airports and finally most VORs include a DME which is an acronym for distance measuring equipment. All of these aids are included in Airbus. Therefore, one of the prime differences between Jumbo and Airbus is that the latter includes radio navigation facilities. The other main difference is rather difficult to describe because we do not wish to give the wrong impression. Basically, the author has taken an extremely detailed approach to the task of writing the program and documentation. Jan Arkesteijn is Dutch by nationality and perhaps this accounts for the meticulous nature, and quantity of, detail which he includes in both the program and the documentation. If one puts these two factors together, namely, the fact that radio navigation is included and the program has been written in a particularly meticulous manner, one will understand that if Airbus is to be flown precisely according to the book, it will prove to be no mean achievement. However, we should make it abundantly clear that as a two engined aircraft, Airbus is inherently easier to fly than Jumbo and if you just wish to go up for a Sunday afternoon jaunt without worrying about where you are going, then Airbus will be happy to oblige.

Purchasers of Jumbo Will know that the first part of their manual is educational, the second part is the actual 747 manual. As a number of Airbus purchasers will already be Jumbo fliers, we are not including the first educational part of the manual automatically. Any purchaser of Airbus, on payment of an extra charge of £1, will be supplied with the educational manual. Otherwise the normal flying manual will be supplied on its own. Incidentally, when we mention the A300 or 747 manuals, we do not mean the actual manuals manufactured by the manufacturers! They are the manuals for flying the simulation of these aeroplanes.

Airbus is flown with the instrument panel on the screen at all times. This contains graphic representations of the following instruments:

(1) Indicated air speed gauge
(2) Artificial horizon
(3) Power setting for No. 1 engine
(4) Power setting for No. 2 engine
(5) Slat setting
(6) Flap setting
(7) Compass
(8) VOR tracking instrument

Reported in normal text on the screen are:

(1) Clock
(2) All up weight
(3) Fuel
(4) Fuel flow
(5) Vertical speed indicator
(6) MACH speed
(7) Precise pitch
(8) Precise roll
(9) Altimeter
(10) Landing gear status
(11) Nose wheel status
(12) Wheel brakes status
(13) Air brakes status
(14) True air speed
(15) Wind direction and velocity
(16) Ground speed
(17) Destination runway place and number
(18) Distance to go
(19) Precise heading
(20) Precise track
(21) Data from No. 1 DME/VOR
(22) Data from No. 2 DME/VOR

The program is compiled Basic, thus delay loops have been included in the program so that the response time of all of the controls are extremely precise as compared to those of the original. For example, the time lapse from starting to set full power, to achievement of full power in the simulation and in the real A300, is to all intents and purposes the same. The response of the artificial horizon requires extra comment. It is extremely good and fast. Thus the time between instigating a roll and this roll appearing on the artificial horizon is about as close to instantaneous as one can get.

We will now discuss the navigation features. In order to understand these, and therefore one of the chief features of Airbus, one has to have at least a small grasp of the function of a VOR. A VOR is a radio transmitter which sends out an infinite number of signals in an infinite number of directions from a central point. If one can imagine a bicycle wheel without the rim and tyre but with an infinite number of spokes, then one has a reasonable picture of a VOR transmitter. Obviously in an aircraft the pilot is only interested in 360 degrees (the compass points) and thus for practical purposes, a VOR may be considered to only transmit 360 radials. An over simplified example of an Omni is that, if it were located in Sheffield, then its 360° radial would pass roughly over Leeds, its 180° would pass roughly over Derby, its 270° radial would not be far from Liverpool. Unfortunately there is no well known town to illustrate the Eastern 90° radial. Roughly, however, the 45° one would pass through Doncaster and Hull. In fact, the radials of a VOR situated in Sheffield might well not reach the towns mentioned for, comparatively speaking, they are short range devices. For this reason, there are a large number of them scattered throughout the world; the U.S. for example has about 800 stations. As we have said, the purpose of a VOR is to enable an aircraft to navigate. It does this by navigating from one VOR to another. Thus, for instance, if there were a VOR at Sheffield and another at say Nottingham, then one would home in on the Sheffield one, then fly out from it until one picked up the Nottingham VOR. Thus pilots hop from VOR to VOR and, as we have described, they do so by flying the radials. Essentially, the Omni instrument is a simple one and after the pilot has selected the radial that he wishes to fly, he is kept to it by an instrument on the panel. There is really only one complication with flying a VOR system and that is to remember whether one is flying towards a VOR or away from it. Going back to our illustration, assume that Leeds is directly north from Sheffield, and one is flying from Leeds to Sheffield, then one would track out from Leeds on the 180° radial. In other words, the radial direction and the flight direction (ignoring wind) would be the same. However, when one switches to the Sheffield VOR, one would be still flying on a heading of 180° but one would be tracking in

on the Sheffield 360° radial. Thus, again ignoring wind — which incidentally is included in Airbus — the rule is that there will always be a 180° difference between one's compass direction and the radial, when tracking inward to a VOR. Anyway, enough of technicalities as these are explained fully in the manual. However, in order to understand the 4 items of information supplied by the DME/VOR, it was important to have a rough idea of what is going on. These 4 items of information are as follows:-

(1) The precise distance to the VOR from the aircraft
(2) The Call sign of the VOR
(3) The radial
(4) The bearing from the aircraft to the VOR

In addition to this information, there is also a pictorial graphic display of the aircraft and the present position of the 2 Omnis which are tuned in. The sum total of all this information is that one is very close to the actual information supplied in a cockpit. It is fair to say that this is, in practice, supplied on one instrument but the important point is that all necessary VOR information is displayed on the instrument panel of Airbus. Although Airbus can, of course, be flown anywhere within its range, the program actually supplies airports and VORs in the Holland/Belgium area. There are 5 VORs at the following locations:

Amsterdam
Pampas
Rotterdam
Eindhoven
Maastricht

There are 4 runways available for landing and take-off:

Runway 22 at Maastricht
Runway 24 at Rotterdam
Runway 27 at Amsterdam
Runway 24 also at Amsterdam

The VORs supplied provide ample cover to enable the user to fly this area of Europe. The manual contains flight briefing for a flight from Amsterdam to Rotterdam and return, including overshoots at both airports. Briefing is also included for the possibility of engine failures on these flights. A rather more uneventful flight from Amsterdam to Maastricht is also described. Accompanying these descriptions is a sketch map of the area including the beacons and VORs involved. The correct tracking and flight paths are noted on the map by a dotted line. Thus although, obviously, the navigational aids will confuse the novice to begin with, the manual does supply all of the details necessary to fly them. As everything is being flown on instruments, the landing phase of the flight, as in Jumbo, is by way of the Instrument Landing System. Localisor and glide scope transmitters are supplied at all of the runways available. An outer marker beacon is also supplied.

The Airbus manual is divided into 5 sections. The first is an introduction and the second a description of all of the instruments on the panel. The third section is a list of all of the control facilities. The fourth is instructional and is sub-divided into take-off, climb, cruise, descent, approach, landing and navigation. The final section is the flight briefings previously mentioned. We should emphasise that possible engine failure is included in the program. This is a rare occurrence however, for even in this, Airbus sticks to true life. There is nothing, of course, to stop the user closing one engine down if he is sufficiently brave to do so. The controls listed in Section 3 of the manual are some 40 in number. Control is from the keyboard. Each one consists of a letter and (except for the navigational controls) one of the directional arrows. Thus pressing the letter "T" and up arrow will result in the throttle being opened by 10%. Continuous application will cause the throttle to open in increments of 10% until full power is obtained. In a similar way, the aircraft is banked by pressing the B key plus the right arrow for right, and the left arrow for left. In this case, the increments are 5 degrees. A fine adjustment is available for the throttle control, the pitch control, the bank control and the nose wheel direction control. In each case the step size is 1/5th of the normal. Thus, in the case of the throttle, increments will be 2% rather than 10%.

As we mentioned inherently Airbus is easier to fly than Jumbo. This ease of use has been taken further, however, by the inclusion of a number of features. For instance, the 3 speeds V.1, VR & V2 are all displayed on the instrument panel at the appropriate times. In actual life this does not happen as the co-pilot is supposed to shout them out as they occur. To some extent, therefore, the program supplies the Airbus pilot with a co-pilot! Another nice feature is that the runway is of a specific length. If you overrun it, as in real life, you will crash. The nose wheel is guideable and if you run the aircraft off the runway it will also crash. A pause feature is included so that a new pilot can take time out to consider his position.

Airbus is, in its computer simulation, a forgiving aircraft. We rather suspect that this may also be true in real life. For instance, we said just now that the runway was of a finite length and that it was possible to run the plane off the end of the runway. This is definitely true but one has to work pretty hard at it. Assuming that the correct flap and slat extension (which is automatic in the program) is left as it is, then the plane will pretty well fly itself off the runway, before you run out of runway. One also has to work quite hard at stalling Airbus. Again, it can most definitely be done but, long before the stall, the pilot gets a buffeting warning on the panel and even after that, one has to pretty well have to cause a stall before the aeroplane will fall out of the sky.

Airbus is, as we have mentioned, a compiled Basic program. Thus its DOS compatibility will depend on that DOS's compatibility with the Microsoft compiler. As customers will know, Microsoft never did produce a compiler for the Model III Tandy, although most DOS's have patches available. On the Model III, therefore, such patches and such DOS's will have to be used. Airbus, incidentally, is a disk only program.

In summary, therefore, Airbus is an extremely close simulation to flying the A300, featuring the use of navigational aids including the capability of using 2 VOR stations at one time. So long as the first part of the Jumbo manual is ordered at the same time, there is no reason why a customer, new to simulations, should not successfully fly Airbus, but it will be after a period of practice! Experienced Jumbo pilots should have little difficulty in flying Airbus per se, but they will have to take a little time to grasp the intricacies of radio navigation.

SIR — SELECTIVE INFORMATION RETRIEVAL

The problem with a catalogue such as this, which is essentially a compendium of additions, is that the phraseology or the rhetoric of the dictate tends to shine through. It follows on from that, that repetitive phrases tend to lose their impact. Throughout these pages we feel sure we have frequently said that a program now and again comes along which is so important or innovative that it is hard to do justice to it in a written description. If that description is repetitive, then so be it, for it is very truthful of SIR. SIR is written by Gordon Hatton who wrote Instant Sort Search, which is described elsewhere in this catalogue. If you are not familiar with it, it may well be of use if you turn back the pages and read that description; not because the present program is an update or upgrade of ISS, but because SIR is so big a database concept that it required a sort written for it — what better than the ISS concept? After all, ISS has proved to be something of a Benchmark for fast sorts both in this country and the United States.

Needless to say, coming from the pen of Mr. Hatton, SIR is not only a database, but a new approach to database structure. Up until now, there have been two important categories of databases, one planar and the other relational. The former is the original type of database written for microcomputers. Our Howe Database Manager is a very good example of an earlier type which is still going strong. Data Writer is an example of an up-to-date sophisticated version. The point is that everything in a planar database is held in one level. The base is split up into records, the records into fields. It is entirely structured. Although one can Search, Sort, Edit and so on, using the contents of a field as a key, one cannot cross the single layer boundary of one record to another. A relational type database is non-planar. If you will, each field is kept as a separate record. Perhaps the name is one, address another, occupation the other and so on. Thus, one file contains all of the names, another all of the occupations. The database is constructed by linking this data together. The advantage of this is self-evident. One is not restricted to a particular record. If the user wishes to know all of the names on file, he can get a list of just the names. If he wants to know all of the persons living in a certain area then the links are rearranged and this information is available. The data is stationary, the links are moveable. But now SIR has come along creating yet a third concept.

SIR is to data what Visicalc is to numeric information. This is a fair statement, but there the similarity ends. Visicalc, as everybody knows, is a spreadsheet, an electric drawing board on which columns and rows of information (usually figures) are entered. By changing a figure in one row then the effect of that change on the remaining data can be displayed. A brilliant concept and one that has sold very well to people who need a "what if" budget or financial type program. SIR has a number of similarities and might be described as an electronic analysis book. Just as in Visicalc the screen is a window on to a large matrix or spreadsheet, so SIR provides a window on to

an enormous analysis book. But with two big differences: with SIR we are dealing with data which is **normally** alphabetic — but may be numeric, rather than the reverse. Secondly, the data in the analysis book may comprise an entire disk. SIR gets over a lot of the difficulties which arise from the great drawback of an 8 bit microcomputer, namely that far more data can be stored on the disk than can be brought into RAM. With the advent of 16 bit machines, this problem is slowly disappearing, but up until recently all microcomputers were restricted to some 30 or 40K of RAM in the machine, yet could access hundreds of thousands of bytes on the disk. SIR makes your machine, and in particular the VDU, a window through which one can view the vast analysis book of entries on the disk drive. Supposing one has a written analysis book on one's desk which stretches the entire length of the desk. If that book is used as a record book, an executive going to it would probably pull out a pad and jot down the entries in the columns which are particularly relevant to his application. For instance, suppose the first column is the name and then there are 15 columns of information as to that staff member, the sex, age, branch, salary and so on. Suppose our hypothetical executive is only interested in knowing the names of people who fit certain categories. Sitting at his desk, he runs his fingers across each name, checks each column and jots down on a sheet of paper the name, sex, salary and so on. This is precisely what SIR does. From the database, which can fill an entire disk, it will (in a manner similar to ISS) effectively construct a sub-set database fulfilling the criteria which he has decided upon. This is a big idea and is tremendously powerful. For once the selection has been made — and remember this is a sub-set, we are not now dealing with the main database, we have now selected from it what we want — our executive has full powers of manipulation; in particular the fantastically fast Sort previously mentioned, the ability to printout, delete, amend and so on. In many respects, therefore, SIR is similar to the relational database.

As an example, SIR comes with a demonstration database on the disk. It is a staff file. SIR is just as happy (and efficient) to construct itself a file about branches — who works in which branch, how much do they earn and so on — as a file about categories, who falls into which, in which branches are they found, job categories etc. The examples that one could mention are literally endless. A customer file may contain columns for ''sales regions'', ''representative'', ''total orders in the last three months''. From this SIR can produce a list of inactive accounts analysed region by region, representative by representative and each representative's accounts in alphabetical order. The power of SIR is that all the user has to do is select the columns he is interested in and he effectively has a sub-set database upon which he can carry out any manipulation. There are probably literally millions of permutations in column selection.

You will notice that so far we have not mentioned statistics at all. Really this is because there are very few restrictions in the program. The most important is that a database in size cannot exceed one 40 track disk on the Model I in single density and on the Model III in double density. If this is considered to be any sort of drawback, then the database can be split into subject categories by the user. Obviously the further restriction of the amount of RAM available is true but in actual use this is not considered to be any penalty. After all, one has in excess of 30K to play with and one is talking about the window or sub-set, not the entire database.

We must make it clear that SIR is not, in any sense of the word, an update to ISS. Hence, we fear there are no update privileges available for present owners of ISS. However, Mr. Hatton has been kind enough to provide us with a small Basic utility which will enable owners of ISS to upgrade their disk files for use in SIR. This is provided free on the distribution disk. One other small bonus is that SIR files are in straight ASCII. They can, therefore, be manipulated by most word processors.

SUPER DIRECTORY — AND SUPER IT IS!

There are many disk directory programs on the market. We have had at least four or five. The reason for this multiplicity is the difficulty of writing a single program which recognises all major disk operating systems and densities. This has now been done and, quite rightly, the program has been named Super Directory. Obviously we must make some qualifications. For one thing, we doubt if Super Directory would read UNIX disks! However, we have tried it on TRSDOS, LDOS, NEWDOS 80, DOSPLUS, and MULTIDOS without problems. Double density also appears to give no difficulty, although it is doubtful whether Super Directory would work with the Model I Tandy double density modification. Anybody interested in this particular point should check with us before they order. In addition, the track density does not seem to worry the program. We read 80 track LDOS directories with no problem at all. Furthermore, whatever difficulties do arise seem to be fairly small. For instance, the manual contains a note that Super Directory will only read NEWDOS 80 disks with the PDRIVE set, as it comes from the publishers. Also that the free space might not be correctly calculated with NEWDOS 80 disks. Perhaps it would be wiser to say, therefore, that Super Directory is all things to all disks just as far as it is practicable to be with the present state of the art. Incidentally, although the manual does not mention it, Super Directory will require two disk drives. The chief reason for this is that it is supplied on a restricted version of MULTIDOS and that disk operating system is required to be in drive 0 at all times. It will be seen, therefore, that presumably a single drive can only be used if the user only wishes to read MULTIDOS disks. We hasten to say that we have not tried this procedure but certainly do not advise customers to buy Super Directory if they do not have two drives.

Support, if any, for hard drives is a bit hazy at the moment. MULTIDOS has a CONFIG library command, but from the MULTIDOS instructions in the Super Directory manual we cannot see any way of notifying the system that a hard disk is on line. However, quite reasonably, the MULTIDOS instructions in the Super Directory manual are very brief. As a matter of fact, the publishers have been very kind to not only include a substantial part of MULTIDOS, but at least some instructions regarding that DOS. It may be, after further investigation, that we will be able to find out whether in fact Super Directory will read a hard drive, but at the moment we think it should be taken that it will not. Incidentally, whilst speaking of the manual, it is what we would call ''non-luxurious''. It comes in a binder and consists of some 50 pages of A5 size, and without a doubt it contains all the information that one needs to run the program. Nonetheless, we feel that it could have been a little more explicit in parts, although the other side of that coin is that one can probably say the same about any manual. As we have said, one distinct plus is that some information is given on the bonus parts of MULTIDOS that are included.

In addition to its versatility, Super Directory contains a large number of enhancements over the normal disk directory type program. So many, as a matter of fact, that it is a little difficult to know where to start. Perhaps at the beginning might help. On booting up, one is faced with a request for information as to the printer being used. The purpose of this is an attempt by the author to make Super Directory as compatible — just as it is as compatible as possible with all systems and densities — as possible with (as the manual states) ''almost any printer on the market''. The five options that one is given are, Standard, Brief, Epson, Manual and Custom. It will be useful to understand why the printer set up is particularly important in Super Directory, so we will digress for a minute. Each file in the library can carry a descriptive remark used for identifying or finding a particular file specification. These optional remarks can be extremely useful, and can be used for a number of different purposes. One example given in the manual hypothesises that the user has three types of chess games on his disks. File names have been allocated to them by way of the commercial name of the program. Thus, Sargon, Microchess or CompuChess. Super Directory maintains its catalogue in alphabetical order; thus the three programs mentioned would be scattered throughout the catalogue. However, if one inserts a remark such as ''Chess'', then the String Search, which we will be mentioning in a minute, would pull out all of the chess programs. As we have said, this is only one use of the Remark utility. It is a very powerful feature. Due to the format of the Remarks feature it is necessary that the program knows what printer is on line. This is the purpose of the Printer Set Up option. Thus the standard option will print a filespec disk number and a 25 character remark per 80 character line. Brief prints two columns of filespecs with disk number and an abbreviated 20 character remark per standard line. The Epson option is used so that the program will select the compressed mode of printing available on that machine, and so on.

Super Directory is entirely automatic in cataloguing. One simply inserts the disk to be catalogued in the drive and issues the appropriate command. Each disk is given a discrete number by the user. Apart from cataloguing the disk and displaying the files on it on the VDU, Super Directory also displays the number of files on the disk being catalogued and also the number of free granules available on that disk. It also shows the number of files that are in memory. This would be the sum of the files previously catalogued plus those that have just come in from the disk. Super Directory is menu driven and the commands available are as follows:

Add File	Category	Delete File
Edit File	Find String	Grans
Halfway	Load Directory	Menu
Next Disk	Printer	Remarks
Sort	Top of Files	Write to Disk
Screen Editor	Scrolling	Exit

A number of these commands are self explanatory and will not be discussed, but some of them require explanation.

Add a File. This is an ability to add details of a disk file via the keyboard rather than through the more normal procedure of the automatic cataloguing.
Category. This command allows one to change the single alphanumeric character which may be added to a disk number. For instance, assume that the file MYFILE is resident on disk 008G. The G had been added because all of the files on that disk are games. We now decide that MYFILE should not be categorised as a game; then this command is the one used to change it.
Edit File. This is essentially a re-naming utility in case a filespec name needs to be changed.
Find String. This is one of the more powerful commands in the program. With it, it is possible to search for a specific file, disk number, category letter, file extension or a specific string. The string is a group of characters contained within a file name or remark. We have found this search utility useful. It has a number of sub-commands in it, all of which are designed to make the search more easy. In the case of the String Search, the key may be from 1 to 12 characters long. A wildcard character is also supported. If one needs a directory program, then it means that one has a fairly large number of disks. Assuming that each disk contains an average of 15 files, then the number of files on record at any given time can get to be quite a large figure. A utility such as this makes the management of such a large quantity of data remarkably easy.
Grans. This option displays all available free space, the last date that the disk was updated in your library and the name for all disks in the catalogue.
Halfway. This is an unusual option, but it does exactly what the name implies, it takes the operator halfway through the catalogue. As we have just mentioned, the number of files in a catalogue can get very large, so this unusual feature can be quite useful.
Load Directory. This is actually self explanatory, but just to confirm that this command is the one used to automatically load a disk directory into the catalogue.
Next Disk. This is a method of fast display. Assuming that the catalogue is sorted, then issuing this command will display the next disk number and all of its files on the screen.
Printer. Although this is self explanatory, it does contain one unusual feature, in that one may print a label to the correct size of the disk jacket for a 5 inch disk. The label contains a notation of the amount of free space on the disk, the date it was formatted, its name and all of the files residing on it.
Remarks. We have already described this.
Sort. A number of different sorts may be carried out on the catalogue. They may be by file name, disk number, category, or even remark. One or two of the commands require that a sort be carried out prior to use.
Top of Files. Simply displays the beginning of the catalogue.
Screen Editor. This is probably the major feature of Super Directory. The screen editor is available at most times that one has to change or enter data to the screen. It is an unusual addition to a program such as Super Directory. We rather suspect that at one time it was a separate program on its own, for it contains, so far as we can see, pretty well all of the commands and facilities that one would expect from a normal screen editor. Perhaps it was added to the package because it is the only method by which the remarks can be read on the VDU. If so, then the remainder of its features are a very considerable bonus. As we have said, it is used in a number of different sections of the program, but on all occasions it is called to make the operator's life easier. If one wants to change any item of information on the screen, then no doubt it would be possible to have additional commands in the menu to fulfil the requirement. It is much easier, however, to have one screen editor on line all of the time so that one can simply call that and make any changes that are required. It also is of particular importance when carrying out bulk deletions. Individual filespec deletions can be carried out with the Deletions command but if there are a lot to be done this can get a bit tiresome. With the screen editor, one just nips around the screen deleting as required.
Before we forget, we have noticed that some specimens of Super Directory in stock have entries already on the Catalogue file. Presumably, this was for testing purposes. At any rate, it is extremely easy to delete them and probably gives good practise for use of either the Deletion command or the Screen Editor. One matter of great importance that we should mention is, that the printer output of Super Directory is not compatible with any of the Genie machines. Hence, if you have either a Video Genie, Genie I or Genie II and you buy Super Directory, you will not be able to use the printer output. We are not sure at this stage whether a patch will be made available by the author. If it is, of course, it will be supplied to Genie owners without charge, but at this time we cannot guarantee it. Whilst on the subject of the printer, it is available pretty well throughout the whole use of the program even though we have not mentioned it above. Thus, whenever a display is shown on the VDU, a Printer option is usually available.

METEOR – FOR THE COLOUR GENIE ONLY

This is a similar game to Asteroids, Space Rocks and so on. You are in control of a shooting platform in the middle of space and are being showered by shoals of asteroids or rocks. You have a laser cannon and every time you hit a rock it splits up into two. Customers are referred to the write-up on Asteroids elsewhere in this catalogue. The player has three lives. Each is used up, of course, when a rock strikes the spaceship. Sound and colour are good; graphics are fairly good.

ELECTRIC PENCIL – A RE-BIRTH

Once, a long time ago, there was only one word processor for the fledgling TRS-80 machine. It was written by a man called Michael Shrayer. Interestingly enough, he was, and presumably still is, a film director and camera man. Any way, he was interested in micro-computers as a hobby and came up with the Electric Pencil. As a matter of fact, he wrote it on an Altair, but as it was pretty well the only word processor around at the time, the owners of other microcomputers clamoured for the Electric Pencil on their machines. The TRS-80 was the leader in microcomputer sales and it was therefore reasonable that he should get the Pencil up and running on that machine. It predated Scripsit by about 18 months and, of course, after that product was released by Tandy, the whole community was divided into "Electric Pencil men" and "Scripsit men". We must confess we belonged to the latter, but it probably true to say we were in a minority. Certainly for several years the Pencil enjoyed extremely good sales, although mostly in the United States. Scripsit was really the start of the second generation of word processors and, as we all know, that breed of software went from strength to strength, until now one is almost unable to count the number of word processor packages that are available for the Tandy alone. Inevitably, this meant that the grandfather of them all, the Pencil, slipped in sales. It is fair to say that it was so popular that it never became obscure, but Shrayer lost interest in the package and the bigger brothers simply took over.
Harv Pennington, who wrote TRS-80 Disk and Other Mysteries, and is the owner of IJG, the publishers of all the Mystery books, was always a Pencil fan and some months ago he took an interest in reviving the Electric Pencil. Obviously in order to sell, it had to be completely re-written and many new features had to be included in order to make it competitive, in features, with present day packages. Thus the Electric Pencil is born again. Harv Pennington is an aggressive salesman, a true extrovert. Being with him is rather like taking a course on one of these band exercise machines. He keeps you going all the time – and he says he is going to keep Electric Pencil going. Already there are two add-on packages to it. They are the Blue Pencil and the Red Pencil. These are dictionary and proof reader programs, rather like Hexspell. IJG plan to issue support programs for the Pencil continuously. One rather important point as to its format is that it comes in both tape and disk versions. Thus, 16K tape owners once again have a fully fledged word processor alternative to tape Scripsit. Great effort has gone into making the Pencil compatible with various printers and disk operating systems. It is compatible with NEWDOS 80 version 1 and 2 on Model I Tandy and version 2 on the Model III, TRSDOS and NEWDOS + on the Model I and TRSDOS 1.3 on the Model III. It is also compatible with LDOS on both machines, but does require a zap to get a directory read. The manual comes with a series of zap sheets incidentally, which is indicative of the support which IJG intend to give to the program. The manual is silent as to whether the Pencil is compatible with DOSPLUS, but we will be doing some tests. Unfortunately, the one thing that the Pencil is not compatible with is the Port addressing used in the Genie to activate the printer. Hence, at this particular minute in time, the Pencil is not compatible with the Genie so far as printing is concerned. As we are talking about a word processor, this is essentially saying that the Pencil is not compatible with the Genie. However, work is being done on this and, by the time you read these words, we should have come up with the necessary patch.
The Electric Pencil comes with a large manual which has about 120 American A4 size pages, which are literally packed with information, screen illustrations and so on. The Pencil is simply too big for us to describe each of its features and commands individually. Overleaf you will see a list of, first of all the features and then the commands. We have to ask you to go through these without any description from us. A careful study of them will illustrate the magnitude and efficiency of the new Electric Pencil.

Features

Easy to learn — easy to use — menu driven
All settings are displayed in menus
Extensive 'HOW-TO' documentation with examples
Disk version supports tape and Stringy Floppy
Compatible with all ASCII files (including BASIC's)
Configure program to your own format
All print format settings saved with file
Fast buffer shift and type-ahead in INSERT mode
Underlining
No keyboard modifications required
Compatible with all lower case modifications
Three print drivers (parallel, serial and TRS232)
Recognizes high memory
Uses printer DCB — you can use any print driver
Commands to load and save special print drivers
Special print drivers may be loaded at any time
Set RS232c and TRS232 options from SYSTEM menu
Supports serial baud rates from 110 to 9600 baud
Supports 1500 and 500 baud tape operations
Cursor speed command
Incomplete/bad loads saved for your inspection
Printer hangs eliminated
All file commands use standard TRS-80 mnemonics
All versions runs with 16K, 32K or 48K
Automatic print formatting
Automatic repeating keyboard
Automatic whole word wrap around
Cursor control — up — down — right — left
Cursor to end of file
Cursor to beginning of file
Tabbing
Scrolling — 5 speeds forward and reverse
Freeze and continue scrolling
Cursor to top of screen
Cursor to beginning of line
Delete and insert characters
Delete and insert lines
Erase line from cursor position to end
Insert and delete blocks of text
Backspace and erase characters
Search from 1 to 38 characters at one time
Replace from 1 to 38 characters at one time
Search without replace
Conditional search and replace
Cursor positions over search character
Selective (wild card) search and replace
Selective (wild card) search without replace
Search and replace carriage return and form feed
Repeat command
Hard Space character
Concatenation of long lines
Upper and lower case shift key lock
Exit any command with a single keystroke
Automatically displays free memory
Automatically displays words in file
Selection of cursor speeds
Selective clearing of memory
Set your own power up configuration
Warm start command
Optional automatic titling
Optional automatic page numbering
Right justification
Left margin may be set from 0 to 255 spaces
Line length may be set from 1 to 255 characters
Line spacing may be set from 1 to 255 lines
Page length may be set from 1 to 255 lines
Page spacing may be set from 0 to 255 lines
Starting page number may be from 1 to 65535
Optional print length may be set to print partical files
Multiple printing of text files
Single page printing
Printer configuration control:
    Carriage return on/off
    Line feed on/off
All options may be changed at any time
Loads any ASCII file
Compatible with all files created by previous releases
Easy back-up, no fancy protection features
Cassette control for dictation — DICTAMATIC
Loads multiple files
Fast disk I/O — loads 36K in under 8 seconds
36K text buffer (48K disk system)
All machine language program
Manual available separately
Source code available — The Electric Pencil Handbook

Commands

Cursor Control

Cursor Left	Cursor Right
Cursor Up	Cursor Down
Cursor Home	Cursor to File End
Cursor to File Beginning	Scroll Up (forward)
Scroll Down (backward)	Cursor to Beginning of Line
Tab Right 8 Spaces	

Editing

Delete Character	Insert Character
Delete Line	Insert Line
Erase to End of Line	Delete Block
Insert Block	Block Marker Character
Backspace & Erase	

Utility

String Search	Continue Search
Repeat Function	System Menu
Print Menu	

Special Purpose

Abort & Exit Current Mode	"Control" Key
Upper/Lower Case Lock	Upper/Lower Case Lock
Dict-a-Matic On/Off	

Special Characters

Form Feed	Terminate Record (line feed)
Underline Character	Hard Space Character
Concatenate Character	

Special Search & Replace Characters

Enter Character	Form Feed Character
Wild Card Character	Null Character

Utility Functions

Number of words in file	Number of records in file
Amount of free memory	

Special Utility Commands (Not displayed in Menu)

Save program configuration	Save print values
Do not save print values	

System Commands

Set cursor speed	Set tape speed (baud)
Save print driver	Load print driver
Clear all text after cursor	Clear all text before cursor
Clear all text from memory	Return to DOS READY

File Commands

Save file to tape cassette	Load file from tape cassette
Verify file on tape cassette	Save file to Stringy Floppy
Load file from Stringy Floppy	Erase file from Stringy Floppy
Display diskette's directory	Save file on diskette
Load file from diskette	Kill file on diskette

Print Values

Justify right margin	Set left margin
Set line length	Set line spacing
Set number of lines per page	Set number of lines between pages
Set starting page number	Set number of records to print

Printer Control Commands

Set printer to half on form feed	Line feed with carriage return off/on
Carriage return with line feed off/on	Set RS232c & TRS232 baud rate
Set number of nulls on serial output	Set parity on serial output
Set number of stop bits (serial output)	Set serial word length

Printer Port Control

Select parallel printer port	Select TRS232 serial/cassette port
Select RS232c (UART) serial port	

THE BLACK HOLE – A GOOD SHOOTING ARCADE GAME

This game adapts the now familiar theme of a controllable shooting (laser) platform at the bottom of the screen, fighting crowds of enemies descending from above. However, it takes this theme and expands it very considerably, resutling in a high action game.
There are three phases to it. In the first the laser platform has to defend itself against descending Dorfians. It can do this in a number of ways, including shooting an unlimited number of laser beams. It can also put a defensive screen over itself. This latter does come in useful. The laser is, of course, controllable in the horizontal plane. While all of this is going on, the sides of the black hole are slowly coming in on you, thus your manoeuvring ability is being continually decreased. The only way to get into phase 2 is to survive phase 1. This phase is entirely different to the previous one. The screen clears and a barrier forms across the top. This will slowly descend towards you. Above the barrier is a Dorfian droid. You have to shoot your way through the barrier and destroy him before the barrier gets down to you. He is dropping bombs through the barrier whilst all this is going on. If you succeed, then you are advanced to the final phase which consists of a rather attractive graphic spaceship which reminds one very much of the one used in the last part of ''Close Encounters of the Third Kind''. Before we get into trouble with that film company, we must say that there is no connection here between this game and that film. It is merely that the shape of the gigantic flying saucer reminds us of it. Inside the flying saucer spaceship is a flashing square. Your object is to blow this up. Meantime, of course, you are being showered with bombs.
Altogether this, in our estimation, is one of the better Arcade games, but as we continually say in these columns, this opinion is entirely subjective. Sound and an optional Alpha joystick are supported.

ENCRYPTION & PROTECTION

This seems to be a favourite subject in this May listing, although the program below should not be confused with Enigma even though they both deal with a similar subject. Securipack is a method of protecting software against unauthorised inspection. Although we have made the position of Molimerx very clear at lectures, exhibitions, and to anybody who has asked in the office, we do not think we have made it very clear in the catalogue. Molimerx takes the view that to protect software in such a way that it interferes with the user's right to make backups or additional working copies is unfair to the end user. In coming to this conclusion, some years ago, we also realised that by publishing unprotected software, we were putting ourselves and our authors at risk. On the whole though, the policy has proved to be the correct one. There have been some unfortunate instances of illegal copying, but by showing that we are prepared to prosecute such people, most have been deterred.
The best deterrent against illegal copying is to supply very full documentation and, most importantly, by being prepared to support the software which one sells. Almost any end user requires some assistance at one time or another and, of course, all of them need to have bug corrections and updates. By pursuing a policy of issuing updates and corrections only to owners who can prove that they have purchased the software from us, or our authorised dealers, we have we feel avoided, to a large extent, a problem which magazines continue to tell us is prevalent.
In addition to the above we have relied, and in 99% of cases have not been let down, on the fact that the majority of our customers are honest. When we do not publish the software ourselves, then of course we have no control over how it is originally put together; thus, for instance, the majority of the programs which we supply from Acorn Software are protected. Super Utility + of course is protected, probably more efficiently than any other software in the world! However, even when we are compelled to sell a product which does have protection, then we always insist on obtaining, from the vendor, repairing rights and Masters for his product. With Super Utility + for instance, we are the only company in the world, outside of Powersoft, to hold Masters. Thus we can normally re-record even a protected disk, and we do this without any charge; thus fulfilling our trading motto of ''Fully Supported Software''.
To summarise this rather lengthy policy statement, we:-

(1) Stand prepared to supply replacement copies of corrupted media, without charge, when the relevant programs are distributed in such a way that the right of the purchaser to make back-up copies is interfered with.
(2) With very few exceptions, all of the software which we publish ourselves, which is the majority of what we sell, is sold in unprotected form.

SECURIPACK – FILE ENCRYPTION

The above policy statement sets out our views on the protection of software, so we are not going through it all again. In any event, a point that must be borne in mind with regard to file encryption is that, in fact, it does not usually restrict the transportability of any code. In other words, one can usually backup or make copies of files even though they are coded. But of course such a procedure would not get any interloper very far unless they had the key, with which to decipher.
The procedure in using Securipack is very simple. The program is only compatible with disk and is a CMD file; it is therefore called simply by typing the program name. The user is then asked for the target file name, a key and a file name for the encoded data. The key may be any sequence of symbols that can be typed at the keyboard including lower case if it is available. Essentially, the only restriction is that the key must be less than 256 bytes long. There is no practical way of recovering a file without the key, so obviously the choice thereof is somewhat important. The file is then encrypted and stored in the file name provided by the user. Almost precisely the same procedure is used to decrypt. Any type of file may be encrypted, whether it be a program (Basic or machine code) or data. Securipack is not interested in the content. Obviously, the file cannot be used until it has been decoded with the correct key. Thus, apart from transportability, Securipack provides complete security.
Securipack includes two utilities separate from the encryption function. The first will compare bytes in separate files for validity. This is very useful when, human nature being what it is, one is not quite secure in one's mind that the decoding procedure has gone as intended. The compare utility enables the original to be compared with the decrypted file. An important feature is that it will work on any other file as well. It is therefore extremely useful outside of Securipack. The second utility is ZKILL. When a file is normally killed, the actual code is not touched. With most disk operating systems, a single byte in the directory entry is changed, thus, normally, it is quite a simple matter to ''unkill'' a file. The whole purpose of Securipack is to provide security for your data, so it was considered useful to provide a utility that not only zeros out the entire directory entry, but also zeros out the file itself. Once ZKILL has been used on a file there is no means whatever of recovering the data.

THE FOREST – A SIMULATION OF THE SPORT OF ORIENTEERING

Frankly, before Mr. Relf submitted this program for publication we had never heard of the sport of orienteering. Having been very impressed with the program, however, we took the trouble to enquire off our more agile and energetic friends and were surprised to find that the sport is very widespread. Apparently, large numbers of people go orienteering every weekend, particularly of course in the better weather. Before we go into the program therefore, in case there are lazy people out there like us, perhaps we should describe the sport. At an orienteering event each competitor is given a detailed printed map of the forest on which is drawn a course to be followed. The course is normally marked in red as a series of numbered circles joined by straight lines. The centre of each circle is a feature printed on the map. This might be a boulder, the corner of a thicket, the junction of two roads, or whatever the course planner has chosen. The corresponding feature on the ground has a red and white 'control' flag next to it. The competitor has to visit the marked control points in the numbered sequence but is free to choose any route between controls; it is not necessary, and frequently impossible, to attempt to follow the straight lines connecting controls on the map. As proof of visiting each control the competitor also carries a control card. This has numbered squares to be marked at the controls. Each control flag bears a simple code of one or two letters or digits which the competitor can check against a description list to ensure that the correct control has been found. Having found the correct control the correspondingly numbered box on the control card is punched with a red plastic needle-punch hanging next to the flag. The needles on these punches form various patterns which can easily be checked afterwards by officials at the finish. The course is a race against time, with competitors usually being started at intervals of at least a minute to prevent them following each other. Other factors which prevent following are that the forested terrain reduces visibility and that different competitive classes (very often this means age groups) have different courses going in quite different directions and crossing each other. Any control flag found may well be on a different course from your own, so it is no good just looking for the flags. The start of the course is marked on the map by a red triangle rather than a circle. The finish is shown by two concentric circles. Neither the start nor the finish need correspond to mapped features. There are usually long tapes laid out to funnel competitors past the finish so they all pass the time-keeper from the same direction and in single file. It should be pointed out that, although there has been frequent reference to competition in the preceding paragraphs, orienteering is enjoyed by many people purely for the personal challenge of pitting their wits against the map, course-planner and terrain. It is this aspect which the computer program captures best and it is hoped that it will encourage newcomers to go and try the real thing.

The program is a simulation of the above. It is in real time and the user of the program literally becomes a competitor. It comes complete with a coloured map of the forest, which has been drawn by Mr. Relf personally, plus of course all necessary instructions. The program is intended to be useful as a training aid to orienteers as well as being a game in its own right. In particular, it can assist with the interpretation of contours for navigation, which is one of the most difficult techniques in mastering orienteering. This is assisted in the program by displays showing cross-sections through the terrain or maps of parts of it at any chosen scale or contour interval. Such displays complement the normal view presented to the user by the program, which is the scene ahead if standing on the ground at some point in the forest, with trees and other objects all around. When moving through the forest in the program, the size of paces and your bearing both drift slightly as they would in real life. You can therefore practice distance estimation and aiming-off techniques as in a real orienteering event. Furthermore, your running speed depends on the type of terrain and on the steepness of hills, so realistic route choices are required between controls. The forest is enormous (effectively limitless) and only a small portion has so far been mapped. There is nothing to stop you moving off the edge of the map, so unless you are an intrepid explorer, be warned! The forest contains no linear features other than vegetation boundaries and the edges of towns and lakes (i.e. there are no roads, fences, streams etc.). This is to make navigation more difficult for training purposes. The program can be used to introduce novices to many features of the sport of orienteering and also to train map makers. It is also likely to be of value to geography teachers, particularly in demonstrating the relationships between maps and the physical features they represent.

At the moment, Orienteering is for tape based machines but, if there is sufficient interest, as we feel sure there will be, a disk version will be forthcoming in the not too far distant future.

EATMAN – CHOMP-CHOMP-CHOMP BEFORE YOU GET CHOMPED

There are a number of games like this on the market, but this one is for the Colour Genie. You are in control of a little man who dashes around the screen. He has to eat up objects in his way before monsters eat him up. We must say that, at first sight, this game appeared very simple, but it is not quite as easy as it looks. Sound and colour are good; graphics are medium. In all fairness there is not much you can do with graphics in a program like this.

CHURCH/TOWER – A NEW ADDITION TO THE ECONOMY LINE

In the last list we started a new line of software. At that time it contained four arcade games, all of which were of reasonable quality but of low cost. They were principally aimed at newcomers to the hobby. We are now adding two more programs. This time they are Adventures. The saving in cost is that two Adventures are supplied for the price of one! We must emphasise that this rather drastic low price does not infer any lack of quality on the program. They are by a new author, Mr. P. Joy, and when he approached us to publish them we made the point that various series of Adventures have been around for quite a while and he was rather late in bringing them to the market. Consequently we agreed that the two, entirely different, Adventures would be sold in the one package and incorporated in this new line. Hopefully we will be expanding it in the future and in the new catalogue it will be differentiated in some way or other.

One of the Adventures is called Church and the other is called Tower. They both follow the fairly standard screen display of a short description of your whereabouts at the top of the screen and then the dialogue beneath. Indeed, the whole format of both Adventures is similar to the Mysterious Adventure line and others. Directions may be abbreviated to a single letter, such as N for north and U for up. Normal commands are also used, such as QUIT and INVENTORY.

The scenarios are fairly straightforward. The Church Adventure is based in a typical church in England which is occupied, amongst others, by a large rat and a mad monk. This is a treasure-finding adventure and 12 are included. Completion of the Adventure is when all treasures are taken to the crypt. The Tower Adventure takes place in the Tower of London. Again the object is to collect treasures. There are 10 of them plus an un-named treasure, and vary from the jewelled orb to the Magna-Carta. Part of your problems are represented by two axemen who live in the Tower, but you will also encounter some ghostly voices. Hint Sheets are available for both Tower and Church.

DIG OUT – AND DIG YOU WILL HAVE TO!

The instructions for this game start "The wildest adventure of your life is about to begin". It is not an Adventure in the true sense of the word, but it is certainly wild. It comes from Computer Shack who, as readers of this catalogue will know, are fast gaining an enviable place in the market as leaders in fast arcade games, and particularly in the field of graphics. It will be remembered that they are the instigators of the wrap around graphic theory. Dig Out certainly continues on in the same tradition. On the title page there are so many things flashing around at the same time that it gets a bit difficult to see what one is to do. The scenario is that you must dig your way through tons of rock and rubble whilst exploring a vast underworld complex. This underworld playground is inhabited by the normal selection of gruesome beasts. They are able to glide through the earth, avoiding your attacks. They are also able to fight back, so they prove to be rather fearsome foes. There are fifteen different levels and in each one you will encounter new and different groups of monsters. You do have an offensive weapon. It is of restricted range and can only shoot through tunnels that have been dug. The monsters have many ways of moving, creeping through the tunnels or burrowing their way through the earth. Occasionally two will join forces and form their own tunnel. As you progress through the underworld, so the difficulty level increases. For instance, the amalgamation of two monsters to fight you will only occur at more advanced levels. The monsters also lay eggs, contact with which is instant death for you. On each screen you will find two rocks. These have many useful purposes because they are just as fatal for monsters as they are for you. If you can trick a monster into running into one or manage to drop one on a monster you will score. Scoring, incidentally, is quite complex. The number of points you get depends upon the time you have been playing the game. Dig Out is compatible with TRS-80 type joysticks and, of course, supports sound. In the disk version, the top six scores are saved permanently on disk. On the tape version, of course, they are lost on power down.

PRESTEL

We are pleased to be able to announce that we have taken approximately 30 pages on Prestel, starting at page 6004762, to show our products. A Response Order page is included and orders placed in this way will be passed along to us by Prestel. The pages will be updated from time to time.
Our pages are included in the Micronet Database and in co-operation with Micronet we will shortly be making available a number of test programs for down-loading direct into a customer's machine. To be quite frank, we are still a little sceptical of this procedure and at this moment down-loaders are only available for Basic programs. We will probably start off with ten or fifteen.
This is very new country for both Micronet and ourselves. We will both, therefore, be treading rather cautiously. If it works out, however, looking a year or two down the line, it could be a very good thing for the customer and the software vendor.

BBC MACHINE

A couple of weeks after this list goes out, advertisements will be appearing in the magazines to the effect that Molimerx is now fully entering into the BBC software market. We have been selling a dozen or so programs for about two months in order to have a look at the marketplace and we now feel sufficiently confident to pursue this thrust more energetically. We hope that eventually we will have as many programs for the BBC as we do for the Tandy/Genie.
There are, however, two points that we would like to make clear:

1. By entering the BBC market neither present customers nor future owners of Tandy/Genie machines will **in any way** suffer.
2. A separate catalogue will be published for the BBC machine, hence the two sets of microcomputers will be kept entirely separate.

EVEREST EXPLORER — ATTEMPT TO CLIMB THE HIGHEST MOUNTAIN

At 29,028 feet, Everest is the crowning jewel in the vast Himalayan mountain range. It has represented the mountain climber's dream ever since it was first discovered by British Surveyors in 1852. For over a century it defeated some of Britain's best climbers until finally, in the Spring of 1953, Edmund Hillary and Tenzing Norgay reached the summit. Since then it has been climbed several more times and by several more routes. Nonetheless, it remains one of the most difficult challenges in a mountain climber's portfolio. In this game you take the place of a director of an Everest expedition and you must plan your assault in three phases: selection of climbers and equipment, establishment and provisioning of a series of camps and, finally, the direction of the ultimate assault on the summit. As with any expedition, you will have to live within the amount of money that you have been able to raise and as organiser, you will need to deal with six major expense items, namely, climbers, Sherpas, tents, oxygen, food and fuel. Everest Explorer is a fairly complex game in which a number of parameters have to be chosen just right, if you are to achieve the ultimate accolade at the peak. The route is obviously important and the timing, because of weather conditions, is all important. You must plan all of these matters and when you have finally established a chain of camps up the slopes, you will need well rested climbers. Their chances will be markedly better if they use oxygen, better still if each has two tanks. Even when, and if, you succeed in reaching the summit, you still have to get your climbers and Sherpas back down to base camp. The instructions come with a good drawing of Everest with the two major routes marked, together with the positions of camps. The program is available on tape or disk. A game may be saved for future use on the disk version. At the time of going to press, we are not sure whether this feature is also available on cassette copy.

QUICKPRO PLUS

Registered owners of this package will know that there is an important update. It is hoped that it will be in stock by the time this goes to press.

Hints and Tips — May 1983

By the time you read these pages the details of the Tandy Model IV should be common knowledge, but I wanted to get as much prior information to you as I could because there are two important points from the software aspect. The first, and perhaps the most important, is that the Model IV is truly software compatible with the Model III. Indeed, it contains in it a switchable Model III interpreter chip; presumably you cannot get much closer compatibility than that. The Model IV is a "blank" machine, which leads me to the second point. That is that it comes complete with a disk operating system, which is called TRSDOS 6.0. In fact, it is LDOS 6.0. The importance of this is that present LDOS owners who are contemplating moving up to the Model IV will have a disk operating system with which they are familiar. TRSDOS 6.0 will, of course, only be supplied with the Model IV. There is little secret, however, that various versions of LDOS 6.0 will be made available for other blank machines. I am, for instance, lobbying hard for a version for the Genie Model III. In summary, therefore, the software position looks all good. Complete compatibility and a system with which the new owner is familiar.
So let us turn to the machine. It is a 64K RAM Z80A based computer and has an 80 column by 24 line screen. When the ROM from the Model III is called, then the machine will automatically boot at 2 mhz and 64 column, just as the Model III does. Booting either in TRSDOS 6.0 or CP/M (which I am sure will be shortly available) will cause the machine to operate in 80 column. The Model IV looks like the Model III in the sense that it is the same size, but it is in fact white in colour and there are several new white keys on the keyboard. The disk drives remain the same, both in appearance and capacity, which is rather surprising. One imagines it was done to maintain compatibility with the Model III, but it seems a pity that Tandy did not go to the new slimline drives so that all four could be contained in the console. One very interesting software point is that Tandy are now starting to adopt some of the LDOS utilities. For instance, the Model IV comes with a Memdisk feature built in. This program is described elesewhere in the catalogue. Essentially it simulates a disk drive in RAM. I am not quite sure of the various versions as yet. The 64K will be the standard, but an upgrade to 128K RAM will certainly be available. I have also been told that a 16K cassette system will be released which, for various reasons, I find a little surprising.
Radio Shack, with the issue of the Model IV, are entering into a head-butting competition with Apple, for their new machine is obviously a direct rival for the Apple IIe. It will be interesting to see what effect the release of the Model IV will have on Apple IIe sales.
Model I/IV compatibility is rather hazy at the moment. In any event, it is stretching compatibility a bit far. It seems to me that if manufacturers can make the next model up compatible with its predecessor, this is about all the consumer can expect. There is going to be an upgrade kit available, so that current Model III owners can go to the Model IV. The Tandy hard disk drives will run on the Model IV with TRSDOS 6.0. As LDOS 5.1.3 is fully compatible with the Model IV (in Model III mode) there should not be any difficulty in driving the hard disk whether one is in Model III or Model IV mode. Molimerx will, of course, be supporting the Model IV fully.
Finally, so far as prices are concerned, I only have the American ones at the moment. The standard 64K, two drive unit is listed at $1999. Apparently, there is to be a version with one disk drive only, 64K RAM and no RS232 interface. This will sell for $1699. The cassette system with only 16K will go for $999. The upgrade to 128K is $149 and the upgrade from Model III to Model IV is $799 plus installation. With our heads deep in software, we are not very familiar with hardware prices, but I would imagine that Tandy have priced the Model IV competitively vis-a-vis Apple IIe. If this is so, I think we are all in for an interesting time.
Customers will already know of the Tandy Model 100, which was released about a month ago. We do not have one yet, so have not decided whether to support it. At first glance it would seem that owners of the Model 100 will have little use for software, but we will have to see.

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for the name of

your closest dealer

in the U.K.

or, if you prefer,

order direct from us.

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Perifernalia, Borgloon.

CANADA
J & J Electronics Ltd., Winnipeg.

DENMARK
Digisoft, Nykobing.

FINLAND
Auditek Oy, Turku.

FRANCE
General Software, Paris.

GERMANY
Computer Service, Burstadt.
Tandy, Fallingbostel.

HOLLAND
Software Import Brab, Eindhoven.

ISRAEL
Mega-byte Comps Ltd., Ramat Gan.

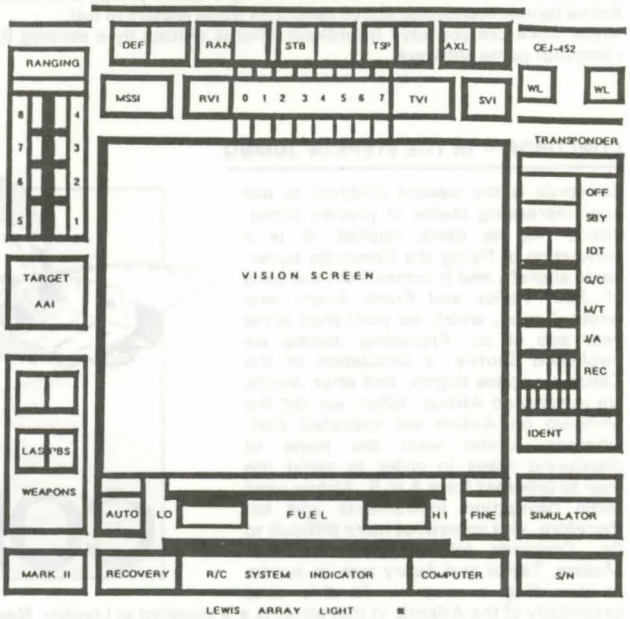
NEW ZEALAND
Molymerx Pty Ltd., Auckland.

SWEDEN
Intrafunktion AB, Moelnlycke.
LSI Electronics AB, Nacka.

U.S.A.
Computer Shack, Michigan.
Powersoft Inc., Dallas.
Acorn Software Inc., Washington.
Logical Systems Inc., Milwaukee.

AUGUST 1983 LISTING

INTERDICTOR PILOT — THE ULTIMATE SPACE GAME



Some year or so ago we introduced into England a game by American publishers called Star Fighter (due to the introduction of Interdictor Pilot it has now been discontinued but will appear in older versions of the catalogue). In the title of that program we stated that it was the "penultimate" space game and expressed some surprise at the use of that phrase by the publishers. We now know why it was so, for Interdictor Pilot is in all respects far better than Star Fighter, even though there are some similarities, particularly in the theme. As a matter of fact, the background idea of Interdictor Pilot is not novel. The player is flying a space fighter called Interdictor Mark II. After taking off from home starbase he has to traverse space at light speed until such time as he meets an opponent. When this occurs he is automatically taken out of light speed, does battle and, if successful, re-enters light speed until the next encounter. After a certain distance through space — depending upon his rank at the time — he will arrive at the first starbase, dock and report in, saving a record of his achievements, or otherwise, to disk or tape. If all goes well and he is sufficiently skilled he will progress through the ranks of Sub-Lieutenant, Lieutenant, Lieutenant-Commander, Commander, Captain and finally, Commodore. So far as is known, no-one has achieved the latter rank, including the author. The higher the rank, the greater the length of time during transits between starbases and the more frequent the contacts with the enemy.

The above is a not uncommon, even perhaps rather mundane, description of a space flying/fighting game. What makes Interdictor Pilot the fantastically interesting and fascinating pastime that it is, is the way in which the author has built on the basic theme. For instance, for a TRS-80, we think that the graphics are a little short of miraculous. Actually this is probably not too surprising because Interdictor Pilot is written in machine code and occupies the full 16K. As an example of the graphics, the illustration shows the screen through which the pilot plays the game. To describe this in detail is beyond the scope of this sales literature, but briefly, the large section in the middle entitled "Vision Screen" is the pilot's view into space. When leaving or arriving at a starbase a three dimensional tunnel appears, through which the pilot must navigate. When leaving he is, of course, taking off from zero velocity, and is therefore nicely aligned, hence a few touches of the controls here and there will keep him on the straight and level out of the tunnel. When arriving at a starbase, however, the position is rather drastically changed. The opening of the tunnel is displayed and it is for him to manoeuvre himself so that he not only flies into it, but also along it. In view of the fact that the aircraft is proceeding at a very fast speed, this small part of the game is no light achievement on its own. Normally, however, as we have said, the vision out through the screen is of space and this is really most amazingly realistic. The heavens seem to proceed across the screen almost exactly as one would imagine in real life. For instance, if, since last either leaving a starbase or coming out of light speed, you have manoeuvred the aircraft and then seek to re-enter light speed after an encounter, however much you have manoeuvred, a scanning device in the fighter will automatically re-align you with the next starbase. The effect is, you just sit there and watch the heavens pass by.

Another amazing graphic realisation is that of an approaching enemy. Up in the left hand corner of the illustration you will see an area entitled "Ranging". This is split up into eight compartments. When you first come out of light speed the graphic area next to the figure 8 will be illuminated. As you get closer to the enemy, the succeeding areas will light up. This ranging instrument therefore, on its own, tells you how far away the enemy is, but the visual effect of him approaching you is quite astounding. He starts off as what appears to be a stationary star. As you increase speed to approach him and, as the ranging indicators decrease from 8 to 1, so he gets larger until eventually you can make out the details of the craft and recognise it. If you are approaching him and do not collide with him, then he or you will swerve to one side and the effect as he passes over, under or to the side of you is extremely impressive. You almost want to duck.

One of the many alternatives open to you when you play the game is what is called the Simulation mode. This is strictly a practice mode. You have to take off from a starbase in the normal way, but once in light speed you can choose the type of aircraft to fight, or indeed you can also choose to practise docking with a starbase. Again, this simulation mode is not too astounding a feature in a game such as this, many of them have them, but what is amazing is that the author has included a command whereby the enemy may be "paralysed". In this mode he is not allowed to move or fight. You can literally fly up to him, circle round, see him from any angle and then fly away again. We find this to be quite uncanny in its realism.

Probably the illustration does not give a fair representation of the screen and instrument panel. The various areas marked are illuminated when in use. For instance, on the right hand side of the illustration, you will see a section entitled "Transponder". If this is switched off, then that area next to the word "Off" will be lit. If it is on Standby, then that section will be lit and so on. This is a particularly fast way of assimilating information.

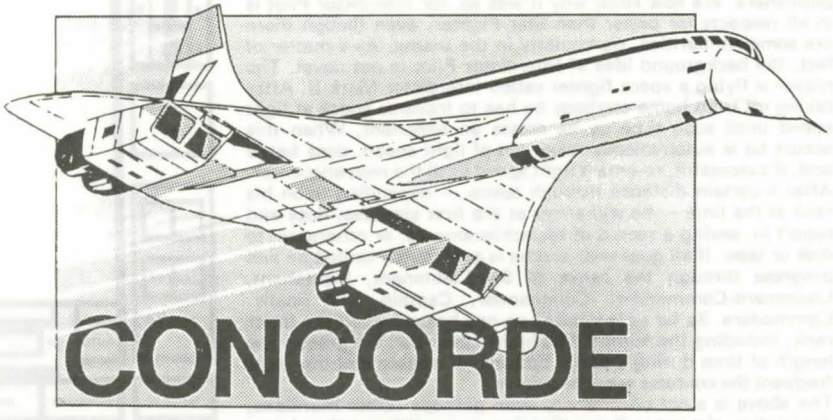
The scenario for Interdictor Pilot is as follows:

> It is now 5 years since 11 battlestations of the Jahdra-Gallan Alliance first appeared in Federation airspace, thus violating the terms and conditions of the Limhof Concord. Early diplomatic efforts on the part of the Federation to avoid open confrontation were frustrated when the 9 members of our Representatives Commission failed to return from their fifth negotiational visit to the Alliance mothership, Kontarkohsz'. Fifty Interdictor Mark I craft were despatched from the nearest Federation starbase on a punitive mission against 'Kontarkohsz' — none returned. Communications received from the last few surviving Interdictors, as they tried to make good their escape, indicated that the defences of the formidable Jahdra-Gallan battlestations were impenetrable to our craft. They remain so to this day. The Federation has, therefore, adopted a policy of attacking their patrol ships and drones in outer space — a task to which the Interdictor Mark I was admirably suited. However, our losses in the early stages of the conflict remained high, in part because the excellent enemy fast patrol craft, the Jahdran Aggressor, was a more sophisticated copy of our own Interdictor Mark I, and also because our own craft would often stray accidentally into battlestation airspace. Such unfortunates were destroyed without exception.
>
> Our performance in the conflict was dramatically improved with the introduction last year of the new Interdictor Mark II craft — our fleet is now made up entirely of these craft. As well as being faster and more powerful, it has many new systems, including automatic avoidance of battlestation airspace while at light speed cruise. As a newly commissioned Interdictor Pilot, you will therefore never experience Battlestation airspace. Consider yourself very fortunate!
>
> You will, however, encounter the Jahdran Aggressor, Gallanic Cruiser and Meson Torpedo drone of the Jahdra-Gallan Alliance, as well as fellow Interdictor Mark II craft and Federation Meson Torpedo drones. It is hoped that if we can sufficiently deplete their vast fleet of craft, their battlestations will be forced to concede an untenable position and withdraw.

Interdictor Pilot comes with what are effectively two separate manuals. The first is a short page or so prepared by Molimerx on how the program is loaded and the idiosyncrasies of it when used on Tandy Model I and III machines. This section is completed with instructions for a very quick demonstration flight. The main part of the manual is a fully illustrated document written in "real time". It assumes that

you are a novice pilot that has just been given your first Interdictor Mark II and it takes you through the craft description of both the Interdictor Mark I and the newer Mark II, plus the theory and practice of the deflectors, propulsion, stabilisers, Saturn array, Lewis array, weapon systems, cockpit display and light speed drive. The next section of the manual goes through, in great detail, the cockpit display and this is followed by descriptions of the controls and their operation. Craft types and Sortie format are described, followed by a section of combat advice, a description of the starbases and finally the use of the simulator. A Sortie, incidentally, is made up of the launch, the transit, which includes the light speed jumps and encounters with the enemy, and finally the recovery at starbase. The Sortie format mentioned above describes these sectors in full.
What more can you say? Interdictor Pilot is written by a serving RAF navigator and in our estimation sets new standards for micro-computer game software.

CONCORDE — IN THE STEPS OF JUMBO



Concorde is the newest addition to our ever increasing stable of precise simulations. As its name implies, it is a simulation of flying the Concorde supersonic aircraft, and it comes from the pens of John Taylor and Frank Avery who wrote Jumbo, which we published some year ago or so. Preceding Jumbo we published Shuttle, a simulation of the Columbia space flights, and after Jumbo we introduced Airbus. When we did the write-up on Airbus we indicated that, whereas Jumbo went the route of displaying maps in order to assist the user to progress from A to B, Airbus used radio navigation instruments and so, therefore, was somewhat more difficult to fly. Concorde follows the route that Messrs. Taylor and Avery took in Jumbo in providing a map — in this case essentially of the Atlantic in that airports are supplied at London, New York, Paris, Washington, Gander and Shannon. Indeed, it is fair to say that Concorde follows Jumbo in appearance quite closely. As may be expected from a supersonic aircraft, however, the feel and flying of the aircraft is entirely different.
Concorde follows the original aircraft just about as closely as it is possible to get. The famous droop snout is simulated as also is re-heat in the engines, which is necessary not only to get the aircraft off the ground, but also to progress from subsonic to supersonic flight. The authors have sent us screen printouts which show that it is possible, in the simulation, to fly from London to New York in about two hours fifty minutes. In order to achieve such an excellent result, however, Concorde has to be flown pretty well by the numbers and with a great deal of care. It is of the greatest importance in flying the aircraft that one progresses from subsonic to supersonic at the right time and that the re-heat facility is used correctly. Re-heat inserts raw fuel into the jet subsequent to the original combustion. It literally gulps fuel down. If you do not use it carefully, you could well arrive many miles short of New York and be out of fuel.
There is no doubt that flying Concorde requires a far lighter touch than did flying Jumbo and this, of course, as with all of our simulations, is a reflection of the real life situation. Consequently, Concorde includes not only the normal controls for the elevators, ailerons and throttle, but also provision for fine control. A list of the controls are as follows. Remember that those just mentioned have the additional facility of a fine adjustment:

Elevators	Elevators up	Elevators down	Elevators zero
Ailerons up	Ailerons down	Ailerons zero	Throttles increase
Throttles decrease	Auto throttle	Re-heat on	Re-heat off
Ground brakes & air brakes	Reverse thrust	Droop nose up	Droop nose down
Undercarriage up	Undercarriage down	Stop watch	Cruise climb selection
Map	Practice approach	Autocouple*	Abort flight
Time skip minutes	Time skip hours		

*Not yet incorporated. Expected release to registered owners late 1983.

The instruments provided on Concorde are as follows:

Distance to go	Bearing to destination	Time
Fuel remaining	Altimeter	Vertical speed indicator
Outside air temperature	Aircraft skin temperature	True airspeed
Nose position*	Undercarriage status*	Minimum permitted airspeed
Acceleration/Deceleration	Indicated airspeed	Maximum permitted indicated airspeed
Mach number	Elevator position†	Aircraft attitude†
Angle of attack of the wings	Turn indicator	Compass†
Aileron position indicator†	Power setting	Throttle indicator†
Auto throttle on/off indicator	Artificial horizon†	

† Graphical instrument representation.
* Replaced by other information after take off.

As is obvious from the above, Concorde is a mammoth program and for those customers who have already purchased Jumbo, provides a very interesting comparison. The manual is complete, but as with Airbus, it does assume some knowledge of the basics of flight. Also as with Airbus, we are offering the first half of the original Jumbo manual, which was the beginners' section, as an optional extra at a nominal charge of £1. The Concorde manual first of all gives a general introduction and then lists the instruments with comments, and the controls with comments. Following this is a description of a specimen flight from London to New York, including the following:

Takeoff	Noise abatement	Intermediate climb
Commencement of transonic acceleration	Achievement of mach 1 (supersonic flight)	Peak drag condition
Re-heat off	Start of cruise and climb	Cruise
Top of descent	Starting down	Descending
Peak drag	Subsonic flight	Initial approach
Intermediate approach	ILS approach	Landing

Appendices contain data for take-off speeds, descent tables, approach speeds and so on. A sketch of the flight envelope of Concorde is also included as an appendix.
Concorde is not only in some ways educational, but it is also jolly good fun. The first time we flew it at Molimerx we were somewhat over-confident, thinking that, as it had come from the same authors as Jumbo, it would fly like it. We were swiftly disillusioned by carrying out a high speed crash on takeoff! The instrument panel in lay-out is similar to Jumbo and the fact that Concorde has a map rather than navigational aids is an added likeness. However, there the similarity ends. They are entirely different beasts to fly.

SUPER UTILITY PLUS SPECIAL EDITION

Many of you will have heard of this product. It is exactly what it says — a special edition of the classic utility, Super Utility Plus. As is also widely known, the normal SU+ is provided on a protected disk which has foxed many a good brain. We do not pretend that it has never been cracked. It has, but only with the greatest of difficulty.

The program has won many awards, including the 80 Microcomputer Readers Choice Utility of the Year award in 1982. We mentioned that SU+ is a classic. This is probably something of an understatement. It comprises a solid 40K of machine language, the result of which is the ability to do almost anything to a disk or its contents. It is, of course, extensively described elsewhere in the catalogue.

SU+ has attained such fame that Powersoft and Kim Watt have published a restricted number (500) of what they call a "Special Edition". The version of SU+ in it is in /CMD form. It can, therefore, be added to working DOS disks, used or backed-up in any manner that the user sees fit. In other words, it is not protected. One thing we should make clear, however, is that prior to purchasing this product, a customer has to sign a licensing agreement. In other words, to buy the Special Edition you have to send us the purchase price, we then send you the licence which you sign and, when we get this back, the product is shipped. Apart from the unprotected SU+ itself, the purchaser also receives two rather handsome binders. The first one contains three parts. The first is the normal SU+ manual in somewhat enlarged size form, the second is, essentially, all of Inside Super Utility Plus, and the third is the Super Utility Plus Technical Manual. As we have said, the binder is handsome and it is certainly very nice to have all of this relevant information in one place.

The second binder and, incidentally, the larger of the two, is absolutely priceless. It has a fully **commented** disassembly of SU+ in both its Model I and Model III versions. It is hard to put into words how valuable such a piece of documentation is. The commenting is full. We do not think that there are any relevant lines that do not contain a comment. The entire listing stretches to 639 pages of American A4 size paper. To see at first hand how a programmer such as Kim Watt actually writes his code is not only educational, it is also very enjoyable.

All of the above costs you a lot of money. Whether it is worth it to you, is a subjective and individual decision. If you can afford it there is little doubt that you would obtain your monies' worth in the educational content alone. Molimerx has been allocated a quantity of Special Editions for worldwide sales outside of the U.S. Once they are gone, then this product will no longer be available. In fact, it will never be available again once the original 500 have been sold. Shipping by insured Receipted Parcel Post is £5.

LIBERATOR — THE BEST YET?

As customers will know, Molimerx is the sole distributor for the famous Computer Shack arcade games. For some unknown reason we have been late coming to market with Liberator, which is the best arcade production that they have published.

The scenario of the game is that you are supposed to be a scientist working with the aid of four assistants on the construction of an independently thinking robot. As you near completion something suddenly goes wrong, the robot goes crazy destroying the laboratory and captures your four helpless assistants. He then flees to a nearby industrial park where he hides and protects his captives. It all sounds like a modern day King Kong. The player's brief is to save the four assistants, who just happen to be young girls, and in order to do this you must brave the dangers of the crazy park and face the strength of the vicious robot. There are four stages because each girl has to be rescued from a different stage. The game is played against four different screens, each one applicable to a particular stage. In the first one you are at the bottom of the screen and have to try and reach the girl at the top via some ladders, whilst at the same time avoiding barrels which are being chucked at you by the robot. You avoid them by jumping over them. In the second stage you have to use all your jumping skill to make your way across the elevators and across ladders to the girl. In the third stage conveyor belts are operated by the robot, which gives the player a rather hard time, and finally, the most difficult of all, you have to manoeuvre your way from the bottom of the screen to the top on a sort of trapeze effect, avoiding bombs as they are rained down upon you by the robot. After the completion of each level, that is to say a group of stages, you will have to face a special challenge. Although there is no girl to rescue there are still points to be earned. Race the clock and collect all the pins holding the structure together, but watch out for the little robots. The program, of course, supports sound and scoring. The disk version writes the scores to disk.

SALE - SALE - SALE

We find that we have three Tandy microcomputers surplus to our needs. The first is a Model I with full expansion box, a regular Tandy monitor, two disk drives, double density and is new ROM. The second is a Model II with full memory and three disk drives. The third is a Model III with two internal disk drives and full memory.

The Model II and III are 115 volts, but are supplied complete with transformers. All of the above equipment is in current use here at Molimerx. It has been serviced regularly. In particular, all drives have been cleaned and realigned within the last six weeks. We wish to dispose of this hardware without any responsibility. We are not in the hardware business and we have no facilities for servicing. We are, therefore, offering them at under half the normal cost, but wish to re-emphasize that once we have sold them, we do not wish to have anything further to do with them. Having made such a dangerous statement, we must add to it that, as far as we know there is nothing wrong with the machines at all. On the same subject, we would prefer anybody interested to come down to Bexhill and collect their own machines, so that they can make sure they have seen them working, and that there are no problems.

The prices are as follows:

	Approx. normal price	Our price
Model I	£950.00	**£450.00**
Model II	£4200.00	**£2000.00**
Model III	£1400.00	**£650.00**

DSMBLR 3 – A NEW DISASSEMBLER FROM MISOSYS

In our anxiety to make sure that customers understood us, we may have muddied the waters a little over the Misosys Disassemblers. Originally we stocked the tape version. As we felt that its functions were far more wide reaching than a plain disassembler, we called it Junior Utility. When the disk version came along, depite the fact that it was probably better known as the Misosys Disassembler, we called it Junior Utility on disk. Now there is yet another version and we find that we really ought to go back to what we should probably have called it in the beginning, namely the Misosys Disassembler. The earlier ones for tape and disk will continue to be known as Junior Utility, as they are better known by that name in this country.

The new disassembler brings to the program pretty well every possible facility that could be available in such a package. Of course it includes all of the original functions, the most important of which is the fact that it is a two pass disassembler. In other words, it goes through the target program first of all to build a symbol table and then it displays or prints the entire target program, with labels, and optional equates. The new version is not restricted, as was the old, to disassembling from memory. It will disassemble a CMD disk file directly. This is an extremely useful function. Output disk files are automatically partitioned and one can screen data for non-code regions. DSMBLR 3 even originates ORGs and END statements. A disk file output can be produced in standard un-numbered ASCII form which is compatible at source with the editor assembler, Edas.

The screening feature is quite unique. Just about every program that one disassembles has segments in it that are actually code and other segments that are in fact data. All other disassemblers that we know of, assume that all bytes to disassemble are code. With DSMBLR 3, however, one has the option of entering screening data in the form of a file which tells the disassembler which segments of the program are to be interpreted as data regions and, therefore, which are to be treated as code. No doubt everybody has, at one time or another, sat staring at some inexplicable code only to find later that it is in fact data. Once the data areas are known they need now no longer be incorporated in the disassembler, thus giving a much easier to understand end product. The addresses of the segments of data are decided upon by inspection of the target program. For instance, a first disassembly to the video screen will easily identify literals or strings since the ASCII equivalent of the object code is displayed. Another type of data is a byte field of varying length, such as tables, conversion codes and so on; conversion bytes are also files within this category. These are hex bytes placed in the code to alter the sense of the following code. Yet another category is, words of varying lengths used as pointers, arithmetic values and so on. Once the data areas have been identified a "pure" disassembly can be made which provides a far more easily assimilated output.

DSMBLR 3, as we have said, supports all of the functions of its predecessors, and customers are referred to previous write-ups for additional information.

GAUNTLET – ALIENS WITH A DIFFERENCE

In this game, San Francisco is under siege. The aliens have landed. The graphics of them landing, incidentally, are rather nice. Anyway, they have arrived on Earth, not to educate us but to conquer the human race. All of San Francisco has been laid to waste, its people captured, with one exception – the player. You have managed to survive because you are within one of the most advanced tanks owned by the army and you have avoided capture. Now you are surrounded by the enemy with little chance of escape. You must fight or die.

Every building is a barricade, every street a new battlefield. The city has become a warzone and you are right in the middle. Your only hope is to defeat literally thousands of aliens, or perhaps escape is a possibility after all! The object of the game is to destroy all the alien fighters and win freedom. Swarms of aliens will surround you, attack and, maybe, destroy you. You will have to keep a steady hand and a steady head. Sound is, of course, supported, as is scoring.

BLANK CASSETTE LABELS – ON PRINTER WEBBING

A number of customers have asked where they can purchase die-cut cassette labels attached to a standard single label width printer webbing. We have now found a source and, for the convenience of any customers who want them, we are stocking them. The total width of the webbing is 5", sporcket to sprocket is 4 3/8ths", label width is 3½", label depth is 1 5/8". The centre cut of the label is 2¼" × 5/8". In other words, they are standard cassette labels. They are sold in hundred lots only.

SUPER UTILITY PLUS TECHNICAL MANUAL – VERSION 3.0

The original Super Utility Plus Technical Manual is described elsewhere in the catalogue. That one was written for version 2.2 and, of course, is still available. The new version is relevant to SU+ Version 3.0. We would re-emphasize the original description, namely that this book is a technical manual. It should not be purchased by customers unless they are proficient in assembly code and wish to interface with SU+.

INSIDE SUPER UTILITY PLUS – VERSION 3.0

Like the book above, the original version of this one was described earlier in the catalogue and was appropriate to version 2.2. The new one is appropriate to version 3.0 and is an extremely useful manual.

MODEL 100 and MODEM 80

The new Tandy portable machine Model 100 is selling very well in the United Kingdom so we have done a number of tests on it to find out which is the best terminal program to enable it to talk to a Model I or Model III machine. Frankly we think that almost any terminal program would work, but we have had complete success with Modem 80. It is only necessary to put both the Model 100 and Modem 80 in Terminal mode and files can be up-loaded very easily. So far as we can see, it does not make any difference whether the Modem 80 parameters are changed to fit those of the Model 100, or the Model 100 STAT procedure is used to change those on that machine. As stated in the Model 100 manual, it is necessary to use a modem null terminator, even though the U.K. version of the 100 does not contain a modem. One wonders why this is necessary, but it certainly does not work without it. We can, therefore, confidently recommend Modem 80 to anyone who wants to use the Model 100 to communicate with any of the Tandy range of computers.

ELECTRIC PENCIL

The IJG version of the Electric Pencil does not work with the Genie and it will be recalled that we mentioned in the original write-up on it that we would be trying to produce a patch. We have now accomplished this and patched versions of the Electric Pencil, both on tape and disk, for the Genie are available from Molimerx. No extra charge is made for the patch.

POWERMAIL PLUS – A MAJOR RE-WRITE OF POWERMAIL

The original Powermail is described elsewhere in the catalogue. This new version, although retaining all of the convenience features and user friendliness of the old, has been completely re-written and very considerably improved.
It is also, to the best of our knowledge, the first applications program (as compared to utilities) that is available for the Model 4 Tandy machine run under TRSDOS 6.0.
Readers should refer back to the original write-up on Powermail, as PM + contains all of the original features plus new ones as follows:

1. Compatibility with the Model I, II, III and 4 Tandy machines, together with the original Genie, the Genie I and Genie II. There is also an 8" disk version available for the Model II, Model 12 and Model 16 Tandy; all of them running in Z80 mode. As we mention above, PM + is believed to be the first applications program for the Model 4 running under TRSDOS 6.0.
2. Although available in the original, we would re-emphasize the ability of PM + to separate a very large number of categories. There are 24 definable on/off flags – we are not quite sure what the permutations of that would be! Certainly we cannot think of any user needing any additional ones.
3. PM + can now span drives and can use multiple floppy disks by logging them in and out of the system.
4. A drive number may now be specified at the start of the program as the only used data drive. When this is done, all requests for a drive number in the system may be defaulted.
5. PM + is of course compatible with hard drives, featuring the ability to use part of a logical or affective drive.
6. An eight level sort.
7. The flags may now be separated and put on to another file. Files may then be merged or separated.
8. The Index file has now been abolished for easier and faster use of the system.
9. An improved key search.
10. Files created by the earlier Powermail, plus the two Radio Shack mailing list programs, may be converted to PM + format. Although we do not think they were sold in the United Kingdom, PM + also maintains convertibility with Special Delivery, Extra Special Delivery, Galactic Mailfile and Postman.
11. Disk input/output has been improved and PM + is even faster than was its parent.
12. Print options have been greatly improved. Entry of the various parameters is now made easier. Perhaps the most important new feature under the Print menu is actually nothing to do with printing, that is the ability of PM + to count. We use this inhouse a great deal. Essentially what it does is to do a normal "print" without using the printer, maintaining at the same time an accurate count. This is, of course, very useful in finding out how many people on your mailing list have certain flags set. An interesting spin off is that, as the program does not have to wait for the printer, one sees the true speed at which PM + zips through its data. Flags and their contents may now be printed on the line printer. We always thought this was a deficiency in the original. There are two ways of doing this. The first is that the name and address of the person on the list is shown with the numbers of the flags that are set to yes. In the second mode, the name and address is still printed, but the flag label itself is spelt out for you. Supposing, for instance, you have just 2 flags out of 24 being used and they are entitled "Catalogue" and "Ordered", then if your correspondent has just the ordered flag set, the word "Ordered" would come out after his name and address. Two other formats of printout are available. The first is fairly normal, in that the name of the correspondent is shown, together with his town and county. The other method, however, is somewhat more interesting. Powersoft have called it their "Salesman's Notebook" print format. As usual the name and address of the correspondent is shown and any flags that are set. Following this there is a space with the title "Notes". The complete entries are nicely organised so many per page, so that the end result is that a salesman or representative can set his entire mailing list up in a binder and carry it around with him on the road.
13. The original Powermail had rather complex wildcard, binary, instring and various other searches available, some of which were overlapping and most of which were rather difficult to understand. The use of instring and wildcard has been considerably streamlined and now gives the average operator no difficulty at all.
14. From the point of view of the operator, a useful new feature is that the program reports, in the same area of the top line of the screen, what particular mode it is in. It is so easy and so quick to move around Powermail, that a continual signpost is very helpful.

As you can see, PM + is a very considerable improvement on the original version. Without a doubt, it seems to us, it is now the premier and definitive mailing list program for our machines. It is interesting to see that Powersoft have changed PM + 's description from a Mailing List Handler to a Data Management/Mailing List Information System. This rather long title is in fact very descriptive, as PM + is approaching that stage where it becomes a general purpose database management program, in addition to being a dedicated one. Although written in America, PM + has been Anglicised, thus Zip Code becomes Post Code, State becomes County and so on.
Existing owners may update to PM + for the difference in price between it and the original, which was priced at £65 plus VAT. The current price of PM + is, of course, shown in the index.

TANDY MODEL 4

As customers will be aware, there is a slightly unusual situation with regard to the disk operating system in this machine, in that TRSDOS 6.0 is in fact LDOS 6.0. As LSI's sole distributors outside of the United States, we are obviously in a far better position to receive fast information on changes to any of their products than are Tandy in the U.K. We thought that we should go on record as saying that even though TRSDOS 6.0 is a Tandy product, we are perfectly willing to render any support to it that we can. For instance, we have already received the newer version 6.1 and we also have the technical manual for LDOS 6.0, which is not at present in the manual which comes with the machine. We cannot sell this manual, but we can certainly give out any technical information therefrom which is required.

TOOLBOX FOR LDOS – ANOTHER WINNER FROM POWERSOFT

Powersoft used to publish seven separate sets of utilities for LDOS. This was a little unwieldy and rather expensive. All of these utilities have now been joined together under the single title of Toolbox, and a rather drastic reduction in price has been made. The old individual ones sold in the U.S. at $29.95 each. The whole collection new sells for $69.95 and, of course, the English prices are pro rata. The new collection, therefore, can be purchased for one third of the cost of the old.
Toolbox consists of the following:

PMOD/CMD
A sophisticated Disk/File/Memory Modification Utility, featuring ease of use. PMOD has a full screen display of 256 bytes at a time, with both HEX and ASCII formats, and makes use of dual cursors for easy modifications. You may modify in Hex, ASCII, Decimal, Binary, or Octal input.

PCHECK/CMD
A Directory Check Utility for LDOS. This will fully check out a disk for any problems that might be encountered. It supplies a full report to screen or printer. In conjunction with PFIX, most directory problems may be easily located and fixed.

PFIX/CMD
A comprehensive directory repair utility which allows the user to completely repair most directory problems. An added advantage is the ability to transfer a faulty boot sector from a good disk. All LDOS supported disk devices may be operated on, including hard drives. In conjunction with PCHECK, most directory problems can be easily located and corrected without extensive knowledge of how directories are formatted.

PFIND/CMD
Will find any occurrence of strings, bytes or words on the disk on a sector by sector basis. Optionally will replace every occurrence it finds. PFIND will locate strings in several different formats, and upper/lower case independent searches may be specified.

PCOMPARE/CMD
Compare any file or any sector with any other file or sector for differences. Will list differences to the screen or to a printer. This is a particularly useful utility, especially when doubtful writes have been made.

PREFORM/CMD
Reformat a disk without erasing the data. This program will lay down new cylinders and then lay your data right back down, intact. Strengthens the format tracks on older disks and easily repairs CRC errors and "sector not found" errors. Not compatible with hard drives or 8" floppies.

PVU/CMD
Verifies a disk for bad sectors.

PERASE/CMD
A software bulk eraser. For 5" floppy only. Removes all traces of data and returns the disk to a blank state.

PCLEAR/CMD
A comprehensive Disk Clean-up utility. Erases unused disk sectors and directory records or clears sectors in a file. Removes all traces of killed files for your protection.

PSS/CMD
Sector Status. PSS allows you to easily identify which file is assigned to any sector or to an entire disk.

PMAP/CMD
Allows you to easily locate file sectors on a disk. Will map out a single file or an entire disk.

PMOVE/CMD
An extremely fast, intelligent, multiple transfer routine. Allows you to type in a whole string of files, and then copies them at great speed. A must for hard drives.

Parameters:

PMOVE a:b,/cde,file1,file1»file2,....

a	=	Source Drive (colon optional)
b	=	Destination Drive (colon optional)
/cde	=	Add this extension to all files (optional)
»	=	Rename file to following filename followed by a continuing list of files to be transferred

Example:

PMOVE 01/bas,file1,file2,file3/cmd

Copies: FILE1/BAS, FILE2/BAS and FILE3/CMD from drive 0 to drive 1.

PKILL/CMD
Will allow you to kill files in an orderly manner using a mask as your choice. Many parameters are available with this one, but complete HELP is included. Also a must for hard drives.

Parameters:

PKILL, :a,1,V,I,S,N,A,L,/ext,$wild
PKILL *,/ext,file1,file2,file3...

!	=	erase entire directory entry of affected files
a	=	drive number (colon optional)
V	=	include VISIBLE files (default)
I	=	include INVISIBLE files
S	=	include SYSTEM files
N	=	exclude visible files
A	=	include ALL files
L	=	indicates Laredo hard drive
/ext	=	include files with this extension
$wild	=	include files that begin with these characters
*list	=	kill all files in list following asterisk (add default extension if needed)

PDIRT/CMD
This program lets you read a TRSDOS Model III directory from LDOS.

PASSGO/CMD
Allows a user to easily remove passwords on a single file or an entire disk.

PUN/CMD
This program is for the Model I version of LDOS only. PUN is the opposite of the LDOS REPAIR utility. It will UNREPAIR a single density disk so that the data address marks are readable by other operating systems.

PEX/CMD
A disk exerciser for the many head cleaning kits on the market. Booting a head cleaning disk is not enough.

PMX/FLT
This filter will adjust graphic characters so that they are printed out as normal TRS-80 graphics when using an Epson MX-80 printer.

PHELP/CMD
A very complete HELP command for LDOS. Saves you time when you need to look up a command you seldom use in the manual. PHELP gives you the proper syntax. Library commands covered by PHELP:

All	Append	Attrib	Auto	Boot	Build	Clock	Copy
Create	Date	Debug	Device	Dir	Do	Dump	Filter
Free	Kill	Lib	Link	List	Load	Memory	Purge
Rename	Reset	Route	Run	Set	Spool	System	Time
Trace	Verify						
Utilities:							
LBasic	Format	Backup	Conv	Patch	Repair		

PBOOT/FIX
Customize the way your LDOS graphics boot up. This allows personalization of your operating system's appearance.

PFILT/FLT
A comprehensive user definable printer filter that may be used for input or output devices.

Parameters:

FILTER,devspec,PFILT,filespec

devspec is a valid DEVICE specification
filespec is a file that contains the conversion data (use BUILD)

data format:
. indicates remark line
: indicates ASCII characters (:a = b)
value = value direct numeric conversion (h40 = h28)

CODE/JCL and DECODE/JCL
These are sample files that show how PFILT may be used for coding/decoding purposes. These are supplied only as examples demonstrating the power of PFILT.

DVORAK/FLT
Try the famous DVORAK keyboard. This is it in filter form (a pure ASCII data file keyboard toggle switchable between DVORAK or QWERTY.

MASTER MECHANIC SET FOR LDOS – A SUB-SET OF TOOLBOX

It occurred to those kind people at Powersoft that some users of LDOS may not need all of the features of Toolbox, so Master Mechanic was born. It consists of the major utilities of Toolbox as follows:

PMOD/CMD	PCHECK/CMD	PFIX/CMD	PREFORM/CMD	PVU/CMD
PCLEAR/CMD	PSSTAT/CMD	PMAP/CMD	PUN/CMD	PASSGO/CMD

COLPLOT – FOR USE WITH CGP-115 PRINTER/PLOTTER

The CGP-115 (catalogue number 26-1192) is one of the nicest – and cutest – pieces of equipment that Tandy have ever released. It is extremely good value for money. It only costs £149 and, although that is a lot of money, the machine does an awful lot for it. Up until the CGP was released, we think we are right in saying that all of Tandy's printer/plotters, and for that matter any other manufacturers' product, were up in the £500 range. We do not know why this unit is of such reasonable cost; it may be because it is of such a small size. For people who like miniature things, as we must confess we do, it really is cute. It comes complete with four different coloured pens and will carry out plots or prints in single or mixed colours. Anyway, the hardware itself is for Tandy to sell, but this program will certainly help you to get the best out of the plotter. Colplot comes in two versions. Version 1 is for Level II systems with 16K or more RAM, version 2 is for disk based systems. The function of Colplot is to automatically draw the more commonly required plots for business and scientific use. These plots and other features are as follows:

1. X-Y plots of functions on user supplied data.
2. Straight line or curve (version 2 only) can be fitted to data.
3. Any number of X-Y plots can be drawn on the same axes.
4. Histograms can be drawn in several formats.
5. Pie charts – up to 4 pies can be drawn together.
6. All plots can be drawn in two sizes (large or small).
7. Data can be saved on tape or disk for re-plotting.
8. Data can be modified and listed as required.

Whether you buy Colplot on tape or disk you will be supplied with some sample data with which to use Colplot. This sample data takes the form of examination marks and structural deflections. Hence, immediately you receive Colplot you can use it to print out pie charts, histograms and so on.

Data for plotting may be entered either from the keyboard or from the media, whether it be tape or disk. Facilities are also included in the program for editing or modifying the data currently in memory. You may also list the data which you have in memory to make sure that it is what you want. In addition, the menu (Colplot is menu driven) contains the ability to do the following:

1. Draw an X-Y plot of data in memory.
2. Draw an X-Y plot as any function of X.
3. Draw histogram or bar chart of the data in memory.
4. Draw a pie chart of the data in memory.

Provision is of course included in the program to use the four different colours available on the CGP-115 in the plot. The results gained from using Colplot are, to say the least, very pleasing. Unfortunately, this catalogue is not printed in colour, so we cannot show you any examples. However, the resolution and the colours are excellent.

MODEL 4

The Model 4 has now been available in the United Kingdom for a month or so and owners are starting to ask for software for it. As a matter of fact, they were starting to ask for software for it before it was even heard of, but that seems to be the way of microcomputers! In the description of Powermail Plus in this list we have mentioned that we think it is the first application program available for the Model 4 running in the Model 4 mode, but there are quite a number of utilities. As may be expected, in that Roy Soltoff of Misosys wrote LDOS, Logical Systems publish it and LDOS is used on the Model 4, it is the LSI and Misosys utilities that have been first upgraded.

Customers should be aware that all of the LSI products which are now available for TRSDOS/LDOS 6.0 have limited backup capabilities. Two backups may be made. We tried to dissuade LSI from taking this course, but without success. We will, of course, continue our software support, so should any users harm their original disks we will be prepared to replace them without charge. At the time of going to press, we have not had a decision from Misosys as to whether they are also following this course, but it may be so.

The following is a list of the utilities which we already stock and which have been upgraded. As you will see, in the case of Logical Systems, the previous title of the program has been prefixed with the letters LS to differentiate it. In the case of Misosys the title has been changed almost completely, but in all cases the abbreviation "Pro" has been prefixed. We are not quite sure of the reasoning for this prefix except that the editor assembler (EDAS) now becomes Pro-Create and Roy and his wife have only recently had a little girl added to their family!

Existing Title	LDOS/TRSDOS 6.0 Title	Author
The Basic Answer	LS-Basic Answer	LSI
FED II	LS-FED II	LSI
EDAS IV	Pro-Create*	Misosys
PDS	Pro-PaDS	Misosys
Misosys Disassembler	Pro-Duce III	Misosys

*The only purpose of the asterisk is to emphasize this particular item. Edas is described elsewhere in the catalogue and is a very full editor assembler. It is, therefore, an important addition to TRSDOS/LDOS 6.0 software.

There are also a few utilities that have been upgraded, that we have not heretofore stocked. These will now be stocked in both the 5.1.3 and 6.0 versions, and are as follows:

PRO-GENY – THE OLD MSP-01

Perhaps on second thoughts the title of this program was the reason for the "Pro" being inserted! However this may be, for some unknown reason we have not previously stocked MSP-01, which is the title of this program applicable to the LDOS 5.1.3 version.

Pro-Geny – MSP-01 consists of four separate utilities, as follows:

DOCONFIG

This utility expands the power of the SYSGEN command by giving the user much greater control and flexibility in creating or restoring system configurations. It works in one of two ways. Firstly you can save the current system configuration to any file of your choice. In other words, you are not restricted to the file normally demanded by LDOS. Secondly you can restore the machine's configuration at any time from any of the configuration files that you create.

MEMDIR

Memdir is a useful utility which provides a directory of the system's low and high memory useage. In LDOS if you invoke a driver, filter or whatever, then if you execute MEMORY, you will see that HIGH$ has been reduced. In other words, space has been set aside at the top of memory for the utilities which you have called. The fact that the ceiling has been brought down, however, is the only information you have, once you have forgotten what drivers, or whatever, you called. Memdir will report to you what is in that memory space.

PARMDIR

Parmdir has two functions. First of all it may be used to generate an output or report based on conditional tests of directory information; the format of this output being completely under user control. Secondly, Parmdir will directly generate a map file of data filespecs for use with PDS (or Pro-PaDS).

SWAP

Sometimes we feel that Roy Soltoff sits up at night thinking up weird and wonderful names. The preceding utility for instance, Parmdir, believe it or not stands for ''parameterized directory utility''. For once he has made his distributors' life simple, however, and Swap not only has an easy title, but is not too difficult to describe. It allows the user to re-assign the logical to physical driver assignments for any two drives, even if JCL is under execution.

HELP – JUST THAT

We have never been a great supporter of Help programs. Misosys did one a while ago and we did not stock it. It seems to us, perhaps rather pedantically, that if one buys a complex system and gets a good manual with it, there is really neither any point in spending money on additional help, nor the necessity to go outside the prime document, that is to say the manual. None the less, we do get some demand for this sort of utility and as LSI are now issuing it for the 6.0 as well as the 5.1.3, it seemed a good time to start stocking their product.

The LSI Help System is a generic phrase, for it actually consists of a number of sections. The principle section is HELP itself. It is a file which works from LDOS READY and two additional files must be available on the disk, namely LDOS/HELP and LBASIC/HELP. Hence, to obtain instant information about, for instance, the SYSTEM command, one would type HELP LDOS SYSTEM. This would cause several screenfulls of information about the SYSTEM command to appear on the VDU. Just typing HELP will display all HELP files, that is to say those files in the system with the extension/HLP. Typing 'HELP filespec' will display all keywords in the specified file. A special file HELPRES/CMD is also supplied. This gives the same services as we have just described, but resides in high memory, with the result that it may be called from within a program.

Other HELP files are available. Namely Technical Help, Help Generator and Help Text Source. The Technical and the Text require two disk drives. The Technical Help package consists of four files, two of them contain information about the Z-80 mnemonics, flag information and opcodes. Two other technical files provide a large portion of the technical section of the LDOS 5.1 Combined Owners Manual.

The Help Generator is a little more interesting to our mind than the other parts of the system. All HELP files are straight ASCII text originally. They were converted by LSI using a program called HELPGEN/CMD. In the Generator package this program is supplied and the user can create his own HELP files. All that is needed is a text or word processor to create the ASCII text and this program to change it into a form useable by the Help system.

The Help Text Source disks are the source files used to create the main Help files and the technical data files.

Finally, we should clarify the products that are available in this HELP software. There are four, and all four are available for LDOS 5.1.3 or LDOS 6.0:

LDOS Help
Help Generator
Technical Help
Help Text Source.

The first three of the above come with instruction manuals and all three contain the principle program HELP/CMD. In other words, all three are to a large extent self sufficient. The last one, Text Source, does not come with a manual it is simply two disks containing the ''source code'' as described above. You may well feel, therefore, that the disks would not be of a great deal of interest unless one of the others were also purchased.

FOREST

We apologise to all concerned that we made a rather bad mistake in the last listing. In the index we stated that Forest is disk compatible. In fact it is not. It is only compatible with tape.

HARTFORTH – A FULL 79-STANDARD COMPILER FOR DISK

(p175 for Model 4 version)

We have already got our feet a little ''wet'' with the Forth language as we have for some months been supplying our Small Forth low-cost compiler which is intended to provide an introduction to the Forth language, although admittedly in only a limited way.

Recently we were offered the opportunity to publish two full Forths, one for tape and one disk compatible. Hartforth is the disk program. We have never published a full Forth, basically because we were not convinced that there were enough customers out there interested in the language. However, the growing number of references to it in computer literature and, therefore, presumably growing interest, has convinced us that we should offer to our customers a complete implementation of the language.

Hartforth is just such an implementation; it conforms to the Forth 79-Standard, which as you might guess was published by the Forth Interest Group in 1979 to provide a public domain standard reference for future implementation of the language. Besides the actual Forth compiler, Hartforth is also supplied with the source code for extensive extensions and utilities in order to provide a very complete Forth development system that the user can use as it stands or tailor to suit his own needs, be they for large complex tasks or small home type applications.

A concept at the heart of the Forth language is the Virtual Memory system whereby program and data storage are divided into ''screens'' or ''blocks'' that each contain 1024 bytes and the philosophy is that these screens are stored on a disk and brought into the computer's memory whenever needed. This means that large amounts of program and data can be accessed without using much computer memory, but does imply that a disk drive is a necessity for serious Forth use and so Hartforth will be of interest only to those with Video Genie, Model I or Model III disk-based systems. It will, however, work just as well on 32K single drive systems as it will on multiple drive 48K systems. In fact it should run without problem on any Model 1 or 3 DOS, single or double density, (it has been tested with TRSDOS 2.3, NEWDOS+ and LDOS 5.1 on the Model 1, and with TRSDOS 1.3 and smal-LDOS on the Model 3) as it uses only TRSDOS documented entry points that are common to both Model 1 and Model 3 computers and fully respects the setting of high memory. Some of those who have encountered Forth before may be puzzled by the references to a DOS as, usually, Forth comes with its own operating system that accesses the disk sectors directly without needing a normal DOS. The problem with this approach is that it does not allow Forth to access files created by Basic and other programs, nor conversely to allow Basic and other programs to access Forth's data. To overcome this isolation Hartforth, while remaining entirely 79-Standard, has been implemented to access its Virtual Memory, not directly, but as a normal file created and controlled by the normal operating system. Furthermore, Hartforth has extensions to allow the use of the standard operating system calls to read and write other files; of course, as far as Forth is concerned, this facility is very non-standard but at times, for the advanced user, quite useful.

Having read this far, some users may be wondering just what advantages Forth has over the Basic language that, with great perseverance, they have come to know and love(!). Really there are several; one that is most often mentioned is that of speed and it is true that Forth programs execute at least ten times faster than Basic programs, and often twenty or thirty times faster for large programs. This is not, however, the whole story as Basic programs can, of course, be compiled to achieve a greater execution speed. The major benefit is that Forth offers execution speeds comparable, but not necessarily equal to, compiled Basic (and other compiled languages) but most importantly does this while retaining the interactive editing and control that interpreted Basic has, so that program check-out and debugging is a fast comfortable process with Forth. This is in contrast to other compilers and assemblers where, to correct errors, it is often necessary to go through a lengthy file editing and re-compilation process to correct even the smallest error. Another major attraction is that Forth is a truly extensible language that can be expanded to suit a particular need or application. It is difficult to describe exactly how this can be done to a non-Forth programmer, but suffice it to say that it really is possible, and at a much more fundamental level than merely writing new sub-routines and procedures as is normally done in a language with a non-extensible architecture such as Basic. Also it is true to say that because Forth is a structured language and, as such, enforces structuring on the programmer, large programs are easier to implement, understand and modify than their equivalents written in Basic. Also this structuring automatically makes programs modular and because these modules may generally be tested individually, large programs end up having remarkably few ''bugs'' to trace.

We have previously, and deliberately, referred to Hartforth as a system rather than just a program and there is a reason. Hartforth uses the extensibility described above to take the 79-Standard compiler and to wrap-around it a set of utilities to support program generation and testing and also provide often-used extensions to the language. What is more the source code (in Forth of course) for these extensions and utilities are provided so that they may be modified as required to suit individual needs and preferences. As a lot of the Hartforth kernel is written in Forth, and because a Decompile utility is provided, it is even possible to look inside the kernel and see how most of the Forth functions actually work!
The Forth 79-Standard actually specifies a minimum set of Forth words (130 to be exact) that manipulate only 16 bit integer numbers, a bit like integer or Level 1 Basic, and it is this minimum set of words, or functions, that we refer to as the kernel. The Hartforth kernel in fact contains 154 words, as it includes some additional words besides those required by the Standard. The specific extensions that Hartforth provides are:

a) Double word (i.e. 32 bit integer) operations conforming to the 79-Standard Extension Word Set.
b) Floating point operations.
c) String operations including addition, comparison, Left$, Right$, etc.
d) Arrays.
e) DOS file handling operations.
f) A rudimentary machine code Assembler.
g) Additional control, keyboard and printer operations.
h) A very complete set of program editing functions including a full-screen editor and utilities to generate new Virtual Memory files and transfer screens of Forth source code from one file to another.
i) TRS-80 screen and graphics control.
j) TRS-80 printer control.
k) Random number generation.
l) Utilities to support interactive debugging of programs.

It is probably fair to state that the Hartforth manual does not pretend to instruct in the use of Forth; its purpose is to document the Hartforth system. However, it does acknowledge this itself, and includes a list of recommended Forth tutorial literature that is available from book-stores, although a copy of the formal 79-Standard Word Set is included with the manual.
As a post-script we should observe that, because the concepts of Forth are so different from those of other languages, it is very difficult to draw parallels that describe the language adequately and the only way to really appreciate its simplistic elegance is to learn the language. It seems true that Forth is a ''love it'' or ''hate it'' language and that most people, once they are past the learning stage, become very involved and passionate about the virtues of the language.

FORTH – A FULL SYSTEM FOR CASSETTE

Above is described in considerable length Hartforth, which is a full Forth system for disk owners. Although this program is written by a different author, its breadth of content is such that it can also be called a full Forth. It contains over 200 different words and, even in a 16K system, it leaves enough room over to enable you to write your own Forth software. If you have larger RAM, of course, then you can customise cassette Forth to your system exactly.
The principle differences of Forth over Basic have been described both in the description of the program above and in many other places. Personally, we feel that whether you prefer Forth over Basic is more a subjective matter than anything else. It is certainly true that Forth is both interpreted and compiled and hence retains some of the convenience of Basic, but injects the high speed operation of machine code. Probably the most difficult thing to understand about Forth is the fact that it is ''extensible''. In other words, the programs that you write essentially become part of the language.
Anyway, whether or not you become a fan of the language is really a matter for you. The cassette Forth boasts the following features:

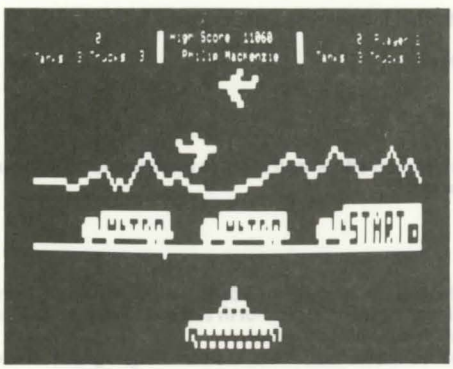
1. Long-term storage of programs is on cassette. Such programs are automatically compiled into the Forth dictionary when they are loaded.
2. If you have a program which you want to be part of Forth permanently, then you can easily create a self-booting system tape, which then becomes your own unique version of cassette Forth.
3. You can configure cassette Forth in precisely the way you wish, so that it fits in with your system exactly.
4. Creation and modification of programs is made simple with the powerful, built-in full screen editor.
5. Cassette Forth makes use of only unprotected RAM.
6. Full support of 8 and 16 bit arithmetic operations.
7. Screen and graphics utilities.
8. Printer output.
9. Random number generation.

To show you what can be done with Forth, a demonstration games program is enclosed with the package.

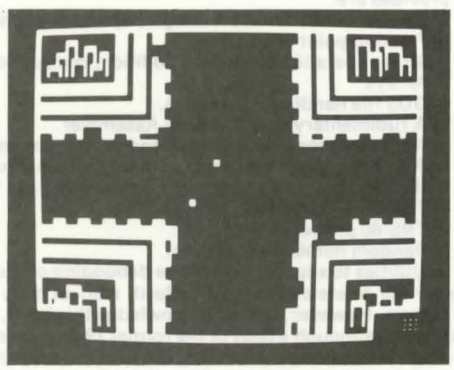
HINTS AND TIPS AUGUST 1983

This month I am bringing you, unashamedly, a plug. We have always considered it best not to carry advertisements in these pages. It never seems right to me to put out a catalogue of one's products then carry advertisements for someone else. However, on at least one occasion in the past I have mentioned in this column somebody else's product, which I felt would be beneficial to all TRS-80 or Genie owners. In that case it was a cure for the keyboard to interface cable problem on the Tandy. Parenthetically, we had a letter from a customer the other day in which he said the suppliers of that product had changed their price and changed the product somewhat and that in fact he could not install the sockets without cutting into the plastic of the case. This was certainly not necessary originally, so we assume that the physical size of the socket has been changed since. Anyway, to get back to the plug. Here in sunny Bexhill is a company called Interface Systems with whom, believe it or not, we have had no contact at all, except that they came in one day and left a sample of a hardware spooler called the Interface Buffer. We tried this out on several of our machines and it certainly seemed to work well. We are, therefore, merely passing the information on, together with the name and address of the company which is: Interface Systems of Trenton House, 16 Eversley Road, Bexhill-on-Sea, E. Sussex. Tel. (0424) 225656.
There are a number of versions of the spooler available, including RS232 to RS232, and perhaps more commonly used, Centronics to Centronics. It seems to work on both the Tandy and Genie machines. Software spoolers are described elsewhere in this catalogue. As the name implies, a hardware spooler is simply a device which carries out the same task, but in hardware form. It is placed in series between the end of your existing printer cable and your printer. The one that we have had to play with mated with the standard Centronics socket on, for instance, an Epson printer and the end of a standard Tandy printer cable. Presumably there are other plugs available from Interface Systems. The 16K version retails at £125.56 and the 48K at £158.00. These memory figures refer to the buffer memory and not to the RAM in your machine. No doubt we shall get shot for saying so, but we would suggest that you select the 16K version, unless you carry out a vast amount of printing. Assuming 30 characters per second for instance, the 48K version would keep the printer busy for about 30 minutes!
Graham Brown of Derby has forwarded to us a patch for LDOS, which enables the Newclock-80 from Alpha Products to interface with the system correctly. Mr. Brown says that the patch is based on the original T-Timer patch supplied by Roy Soltoff in the LDOS Quarterly.

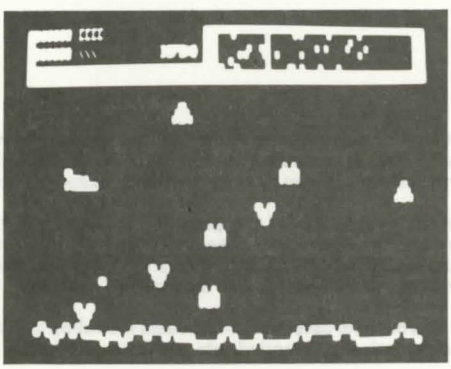
```
.NEWCLOCK/FIX  -  patches SYS0/SYS to enable use of the
.NEWCLOCK-80 clock module from Alpha Products
.The SYSTEM (UPDATE) command is no longer available.
.
D04,08=D2 45 ED 78 0D CD A6 47 ED 78 0D E6 0F B5 12 1B
D04,18=C9 11 43 40 01 B5 03 CD C3 45 10 FB
.No changes in above coding, change is in line D0D=68 below.
D0D,58=21 46 40 01 BA 01 CD C3 4E 06 03 CD C3 4E 01 BC
D0D,68=0F CD C3 4E DB BB E6 03 47 11 45 40 21 48 40 20
D0D,78=29 CB FE 10 25 ED 78 0D A0 07 57 07 07 B2 57 ED
D0D,88=78 0D E6 0F B2 77 2B C9
.End of patch
```



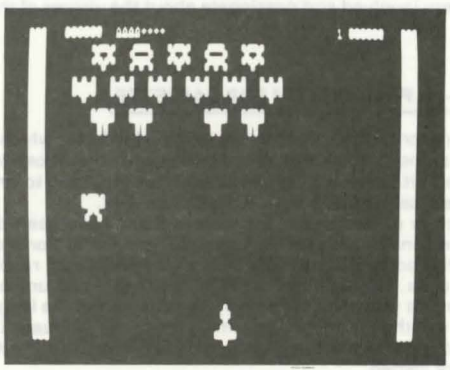
CONVOY



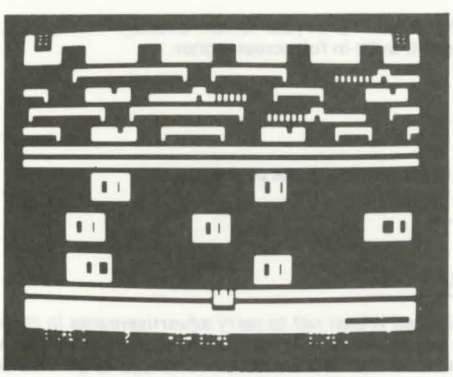
STRONGHOLD



DEFEND



DELTA TAU ONE



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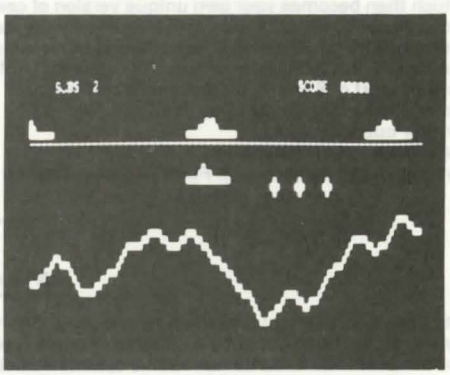
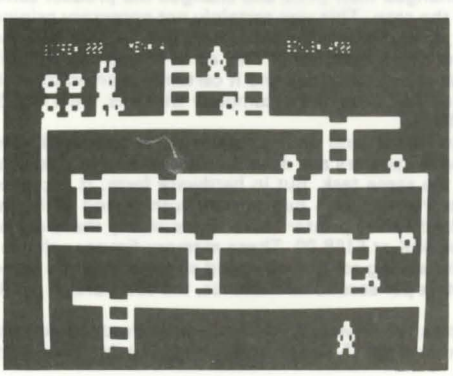
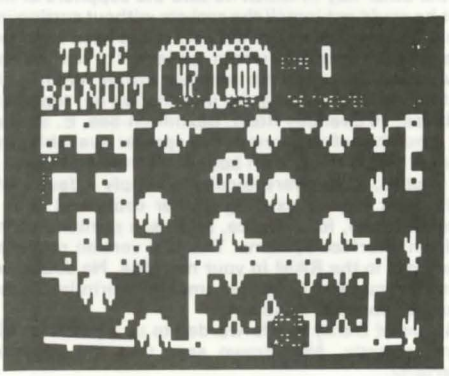


SEA WOLF



LIBERATOR



TIME BANDIT

CHRISTMAS 1983 LISTING

A FEW CHRISTMAS POINTS

Obviously we get a lot of comments from customers on what we do and do not do. Last Christmas was particularly prolific. One criticism which was made quite strongly by a number of customers was that the Christmas Listing was not sent out early enough! We have checked back and find that it was in fact mailed from Bexhill during the week of November 15th 1982. It would seem, therefore, that the majority of customers want the list even earlier and that is why we are mailing this one now.

Another matter upon which we received a lot of comments last year was that, as there was no categorisation in the old index, it was hard for customers (presumably with wives and girl friends) to pick out a suitable Christmas present. As you know, this year the index is categorized, but we thought it might help people even more if we ran a sort of summary of the majority of our arcade games, together with some screen printouts.

We therefore hired an outside, unbiased, user to come in and assess the games. The results of his survey are shown below.

You may have noticed that we are trying to get more illustrations into the catalogue but this is a very hard thing to do. The ideal, of course, would be to do a screen print, graphics and all. Unfortunately this is not very easy to attain when one is coping with programs written by a lot of different authors in a lot of different ways. Eventually we found a method of stopping the action on a Model III and taking a photograph of the screen. This is neither an easy nor an exact science. Some programs appear to be harder to photograph than others. We must therefore make it clear that the illustrations are for guidance only. A program that looks pretty horrible in the illustration may well be quite the opposite in real life. Also as some arcade games, in a photograph, come out to be a complete mess, they will not be included. Hence, if a program in which you are interested does not have an illustration, it is not because we think that it is in any way inferior; it is simply that the illustrations come out poorly. For instance, you will see an illustration of Delta Tau One. It is not impressive. It looks like an ordinary Invaders type game; yet if you look at the games assessment, you will see that it gets high marks for fun and addictability. In other words, the illustrations are not for guidance, simply for illustration.

We have not yet found a good way of reproducing colour in a monochrome catalogue. We have done some experiments with grey shading, but cannot say that we are particularly enthused with any of them. For the time being, therefore, it will only be black and white programs we will be illustrating. We mention this point now, because this Christmas, as you will see, we are extending our range of programs quite considerably into the TRS-80 Colour machine. This microcomputer had what might be called a shaky start in the United Kingdom, even though it was, and still is, very popular in the United States. There are signs now, however, that customers are buying more and more of them, and consequently we will be stocking more and more programs. Tandy have also now issued a new 64K Colour Computer in the U.S.

GAMES ASSESSMENT

You will see that three columns are set against each program. The fun and addictability marking is on a scale of one to ten, with ten being the highest mark. Graphics are graded as F, M or S, for Fair, Medium or Strong.

The assessment of games is entirely subjective; what turns one person on will prove to be an anathema to another. This is why we have hired an outside person to make this subjective judgement.

A number of games which contain quite a high graphic content are not included in the list because they cannot be described in the usual useage of the term as "arcade games". We are thinking particularly of Basket Ball, Astroball, Pinball and Duel-n-Droids. Some of these are extremely good, in particualr the two pinball games, Astroball and Pinball, and they have a good graphic content. None the less, we have not included them for they are not what one generally calls an arcade game.

Finally, Melbourne House does not seem to be able to decide whether it is going to continue to provide TRS-80 versions of its five games. Hence the lower costing ones, Martian Patrol, Space Attack and the Wild West have not been included in the list. Penetrator and Strike Force are included in the hope that Melbourne House will decide what they are doing. It might be wise to indicate in your order whether we may substitute Defend, which is very similar to both of them, and in fact receives higher marking.

NAME	FUN	GRAPHICS	ADDICTABILITY	NAME	FUN	GRAPHICS	ADDICTABILITY
Alien Armada	6	F	4	Arachnid Plus	5	F	5
Assault	6	M	5	Asteroids	7	M	6
Blackhole	6	M	8	Convoy	7	S	5
Cyborg	6	M	6	Death Duel	6	S	6
Defend	9	S	8	Delta Tau One	8	M	7
Digout	8	M	8	Dungeon Escape	7	F	6
Engine Driver	6	F	8	Frenzy	5	F	4
Frog II	7	S	8	Fury	6	F	6
Gauntlet	7	F	6	Liberator	8	M	7
Penetrator	7	S	7	Sea Wolf	7	M	6
Serpent	4	M	2	Space Invaders	7	F	6
Space Rocks	7	M	6	Strike Force	8	S	8
Stronghold	4	M	3	Tenpins	2	M	2
Time Bandit	7	S	7				

TIME BANDIT – THREE DIFFERENT WORLDS OF TIME

The screen of Time Bandit is illustrated. In fact the playing screen is so full that the illustration looks a little bit of a mess. Things do not get an awful lot better when you play the game. It is fast and everything seems to be blinking at once. Time Bandit consists of three worlds, the Western World, Fantasy World and Space World. You as the Time Bandit travel from one to the other. Time Bandit is, to say the least, a complex game. As we have indicated above, things are flashing at you and moving around all the time and it takes quite a while to get sorted out and see what is going on, but when one does, the work pays dividends because, if you like action then you are certainly going to get it in Time Bandit. Each leg of your adventure starts from the hut in the Timegate. As a matter of fact this can be seen in the illustration just above the centre point of the screen. You will see a little house and inside it is what is supposed to be a little man. This does not show up very well in the illustration, but in actual fact the little man is you, the player, and is controlled with the arrow keys. From the Timegates the player makes his way to the map of his choice by entering a pulsating gate. Each gate represents a different map. When a new map appears after you pass through the gate, the player phases in. Once in the map you are trapped. The only way to escape is to take the keys, which are indicated on the screen, to the locks which are also indicated. Only one key can be carried at a time and it only unlocks the first lock to be reached. Treasures must be collected as they are the Time Bandit's main source of power. The first treasure in each map is worth 100 points, the second 200 and so on. You can shoot the evil guardian (they crackle and sizzle) and you can collect 30 points. The hazards, as one might expect in such a complex game, are numerous. Power is the life essence of the Bandit. It starts at 100 but will decrease as a result of damage by creatures and time limits. When it gets below 10 everything starts shaking and if you let it get to zero, you are dead. Another hazard is that time travellers are apparently unstable; they can only remain in a map for a limited period of time. If you stay too long then your Power begins to decrease rather rapidly. There are plenty of creatures around and without exception they are all rather nasty. High scores may be saved both on the disk and cassette and, as always, sound is included. Time Bandit is a good game, but it is not for the faint-hearted. If, like the writer of this review, you like time to think about things and are a bit slow, you would do better with a game other than Time Bandit. On the other hand, if you have excellent reactions and good instincts you will enjoy it.

CONVOY – ON THE ROAD NOT ON THE SEA

The graphics in convoy are impressive. The object of the game is to protect a convoy of refrigerated food trucks from enemy invasion. If you look at the illustration you will see the trucks coming out of the Start Garage. Even in this rather limited form of reproduction they can be seen to be quite impressive. The manner in which the convoy is protected is through the army's newest supertank. This is the object you see at the bottom of the screen. It has to fire at incoming aircraft, helicopters and tank mines. The trucks have a starting and finishing point, of course. On each side of the truck is the word "ULTRA". As bombs hit the truck, one letter is blown away. When the entire word has gone, then the truck is destroyed. The player has three tanks at his disposal. Bombs will not affect them but the enemy has laid creeping tank mines around, which can be destructive. The graphics are good, but the action is a bit slow. We see that our independent assessor has given Convoy halfway marks for addictability and we would think this is about right. It supports sound, of course, and the disk version saves the top scores to disk. A joystick is also supported.

FURY – A SPACE SHOOTING GAME

The scenario of Fury is that you are the last line of defence for your home planet. Most of the outer defences have gone and, equipped only with a highly mobile space fighter and neutron torpedoes, your task is to blast any of the enemy you find in your assigned sector. As you clear each sector you are transferred to successively harder sectors where the fighting becomes more fierce. In actual practice the game is much along the line of Asteroids. The ship has the ability to thrust in a forward or backward direction and turn clockwise or counter clockwise. Once thrust is applied the ship will continue in that direction until the thrust is fired again, although you may rotate right or left at any time. A maximum of four torpedoes can be fired and controlled by your ship's computer at one time. This means that you can hold down the fire key continuously. As you proceed to higher skill levels the maximum number of missiles will decrease. The defence of a sector is divided into three phases. Once all three phases have been completed, the difficulty level is raised and you start over again at Phase One. In the first phase the aliens are pre-programmed to follow a set battle flight and their destruction is worth 50 points. In the second phase aliens are beamed into the sector in four parts. These small sections cannot be destroyed and nor will they destroy you. When they meet they form a larger alien, which certainly has the ability for destruction. If you let them, after a third period of time the aliens will build up energy and change form. These new aliens will attempt to ram you. In the third and last phase you attempt to destroy an enemy base station. This station has an orbiting guardian which will try and run into you and send your ship in a different direction. As is probably obvious from the foregoing, Fury is better as it goes on. It would have most appeal for customers who like a good shooting game with fair graphics and plenty of interest. Sound, of course, is supported.

BOXER – GRAPHIC BOXING

This is an original idea. If anything it bears a resemblance to Duel-n-Droids. The idea is that the player controls one graphic boxer in a ring and the computer controls the other one. We suppose a fair criticism is that such a program attempts to do the impossible, that is to say, to simulate a real boxer on the VDU. When a program inherently falls slightly short, then there is room for dissatisfaction. On the other hand, so long as one accepts the fact that it is presumably impossible to completely and truthfully simulate an active boxer on a TRS-80 machine, then this program probably gets as close as one can get. The graphics are done well. There is a machine language portion to the program, which is written in Basic, which presumably manages the graphics. A rather nice touch is that when the program is first initiated the player can elect to have a match in light, medium or heavy weight. The other side of that particular coin is that he can cheat and have two weights unfairly opposed to each other. A skill level of one to nine is provided. Apart from the appropriate weights, seven items of information are provided underneath the graphic representation of the ring and the fighters. These are; the punch force, the number of wins, stamina level, the round number, whether or not a punch has been made, whether or not a hit has been made and the skill level chosen. Most of this data changes as the fight progresses. The player can elect to hit to the head, hit to the stomach or sway. The computer can do the same. Blocking appears to be random. Consequently, whether or not a punch succeeds must be equally random. The program supports sound, which includes voice simulation. Thus, the boxer who is knocked down is counted out verbally (through an amplifier) and the rounds are also announced by voice. Incidentally, there are nine rounds to each match. The voice is moderately clear. Whether you are going to like Boxer is really very subjective. Duel-n-Droids has been very successful with some people, but others are completely bored with it. Whether you like Boxer or not, without a doubt, it can be said to be unique.

EQUIPMENT SALE

A rather amusing result of our offering certain Tandy equipment for sale as surplus to our needs in the last listing, was an enquiry as to whether we were going into liquidation! For anybody who had similar thoughts we would assure them that, the reason for selling some hardware was our present expansion into the BBC and IBM machines. Since moving into these premises at 1 Buckhurst Road, three years ago, we have expanded three times. This time it was not possible, and as the walls are not elastic some Tandy equipment had to go to make room.

The Model I and Model III machines were sold. The external disk drives to the Model II also went. The Model II machine advertised with the disk drives is still available. The Tandy catalogue number is 26-4002. It normally retails at £1,999. Like the other equipment, we are offering it at about half price at £950. It is 115 volts, but complete with transformer, has one internal 8 inch disk drive with a capacity of half a megabyte. RAM is 64K.

STRONGHOLD – MOBILE CATAPULT VERSUS NUCLEAR WASTE

This is one of the games in respect of which an illustration is shown on the illustration page. The game is rather fascinating and quite addictable, although the basic idea of it is rather old; reminiscent in fact of the days in which we played paddle ball on microcomputers. If you look at the illustration you will see in each corner a design which looks rather like a silhouette of skyscrapers, surrounded by two or three borders. The skyscrapers are intended to represent cities. The borders are protective shields around each city. Each city also has a catapult which moves round the outskirts. In the case of the player's catapult, this is of course controlled by arrow keys. The computer's are controlled by the computer. It is difficult to make out the catapults in the illustrations, particularly as some shields have already been hit. If you look at the lower left hand city, however, the outside shield is still intact and up in the right hand corner is a rather longer design of white than the other border walls. This section actually moves around the outside of the wall and, as we have said, is under the control of either the player or the computer. In the centre of the illustration are two dots. These represent the nuclear waste debris. Whenever this debris hits a city's shield a little bit of the shield is eroded away. The only way to replenish the shield is to destroy the other cities. The debris is catapulted back when it hits a catapult rather than the shield. Hence, by moving the catapult around the city outline it can be protected and the debris sent back to hit another city. The debris can not only be sent back to any city in the direction from which it came, it can also be caught by the catapult, carried around to any position and sent off from there. Stronghold is one of these games which is basically quite simple but in fact is very enjoyable to play. It supports sound and a disk version saves the top 15 high scores to disk. As one advances through the game, incidentally, so many factors in it become more difficult; opposing defences are trickier, the game becomes faster and new dimensions are added. Stronghold may be played by either one or two players.

TRS-80 COLOUR COMPUTER

No doubt Tandy will forgive us for saying that when this machine was first introduced into England it was rather highly priced and it did not sell at all well. Consequently, although we have had a few programs for it, it has certainly not been a top priority.
However, over the past couple of months or so, we have received more and more requests for software, so Tandy must be selling an increased number of machines. Consequently, we are increasing our stock of software for the existing colour machine.
We say "existing" because, as people probably know by now, there is a new version of the machine released in the United States. This is a full 64K and sports an equally full keyboard. The casing is in the now standard Tandy off-white colour and it is an attractive package. It is being introduced over there at the original price of the 32K machine. Tandy, in this country, are uncertain when the new machine will arrive, but we would guess it will probably be here for Xmas. Actually this is a rather neat step of Tandy's because it means that the colour games software is going to tend to be for the earlier machine and the more serious software for the 64K. In conjunction with the 64K machine a new operating system for disk owners is being released. Tandy certainly seem to be very serious about this new hardware.
The following games are now in stock for the original colour machine. They are all available on both tape and disk and they are also all imported from Computer Shack, which has built such an enviable name for itself in the line of TRS-80 graphics. These new game programs certainly follow this tradition, in that the colour is outstanding.

CHOPPER STRIKE – FUN IN A HELICOPTER

Chopper Strike is a nice game, the colours are particularly attractive. It has one drawback though and that is that it is only compatible with a joystick control, hence, if you do not have a joystick on your colour computer, then you will have to pass Chopper Strike by. Essentially it is a shooting game. The helicopter is proceeding over a landscape. We are not quite sure why the landscape should be violet, but it is and you have to use the fire button of the joystick to hit craft which take-off from the land below. There are also oil-wells, which of course are stationary, together with gun emplacements. There are two nice features at the top of the screen; one is a large rectangle and comprises a sight. When a craft takes off from below and passes through your line of fire, then it appears in the sight and you can shoot it. The other rectangle contains an indicator which will show you in what direction your guns are pointed. This is essential because quite often you will be shooting at the ground. The direction of your armament is changed with the joystick, as also is the direction of flight of the helicopter. Heavy movements of the joystick for example North or South will take the helicopter up or down, lighter movements will simply change the direction of the guns. When the joystick is moved in an East West direction then, of course, the helicopter goes from left to right and the gun position is not changed. This rather complicated description actually results in your being able to move the helicopter or the guns in pretty well any direction you want.
Rather monotonous and obtrusive sound is included, but then as many of you will know, we are not very keen on sound on computers anyway! In summary it is a good shooting game. The only possible criticisms would be that it is slightly slow, but on the other hand, the excellent colour rather makes up for it.

FURY – DOGFIGHTS AND THINGS LIKE THAT

The first thing to say about Fury is that the colour computer version is different to the Model I/III monochrome version. The latter is described elsewhere in this list. Another point that should be made before it is forgotten is that Fury has, what the original publishers call, voice reproduction. This so called voice is restricted, thank goodness, to the beginning and end of the game. One should not be too sceptical of it, after all voice reproduction without a synthesizer and in a low cost game is not to be sneezed at. On the other hand, it is pretty primitive. It sounds as if the gentleman speaking has had a rather large intake of scotch at the same time as a mouthful of aniseed balls. For those of you who are totally unable to understand the voice, it announces "Fury by Computer Shack". There are one or two other preliminary matters. First of all neither the voice nor some red clouds are present in the 16K tape version of colour Fury. Secondly, like Chopper Strike, Fury is only compatible with machines which have a joystick. In our estimation, Fury is the best of these new Colour Computer games. The action is fast, the reaction of the joystick is nice and firm and there are many things to shoot at. Fury is not as one might assume, a space shooting game. As we mention, in the disk version there are clouds around, but you also have balloons and what appear to be biplanes of some sort or another. Anyway, as we have said, there is plenty to shoot at. The actual craft which you control is in the centre of the screen and is, of course, controlled by the joystick. The fire button on the stick fires your rockets or machine-gun.
As with all of these games there are various points allocated, for, in this case, the hot air balloons, parachutes and enemy aircraft. As your points increase so the game gets harder. Apparently when you reach 5,000 points the enemy will launch a magnetic air mine at you, which will chase you wherever you go. At 20,000 points the enemy gets reinforcements and launches two mines. At 50,000 and 75,000 points, further mines are added. We have to take the author's word for this, never having got anywhere close to that level. At around 30,000 points – again we have not been there – your cannons heat up and, therefore, you have to fire more slowly. In other words, as you increase in points the game gets harder. You will like Fury.

DEMON SEED – BATS BELIEVE IT OR NOT

Like Fury, we are rather keen on this one, not because of any great originality about the game, but because of the graphics which, after all, is what a colour computer is all about. If you can imagine Invaders played not with graphic alien spaceships but with flying demon bats, the wings of which move in a rather horrifyingly realistic manner, then you have got an idea of how Demon Seed is played. The bats come at you in waves and particularly, the lower ones, in the flocks, can be pretty nifty. Needless to say, different waves have varying requirements in levels of skill. Thus, in the first wave each bat is worth 50 points in formation and 100 points out of formation.

By the time you get to the third wave, seeds fly back and forth across the screen, each worth 40 points, but these soon hatch into monstrous demons and sweep down and drop bombs. To make life even more interesting you have to hit the demon directly in the head; winging one will only cause the loss of the wing, namely 20 points. In the fifth wave you have to destroy the demon attack ship. The first step is to break through the underside of the ship. Once an opening is cleared you must fire at the rotating shield. The second and fourth waves, incidentally, are similar to the preceding one, except that only one shot may be on the screen at a time.
Demon Seed can be played either with the keyboard arrows and other keys or with a joystick.

C-III – TRS-80 TO COLOUR AND VICE VERSA

This is not a game, it is an extremely useful utility which enables disk files to be copied from a TRS-80 Model I/III machine to a TRS-80 Colour formatted disk. The procedure may also be carried out in reverse, that is to say, from a Colour disk to a TRS-80 Model I/III. This is a rather neat trick, but does carry some restrictions. First of all you have to have two drives, and on a Model I you must use the special kernal Multidos system disk that the program arrives on. If you are using a Model III, then the C-III must be converted to your own operating system. As we have said, on the Model I the Multidos must be used. If you have a three drive system, of course, then there is no problem because you can copy the disk in Drive 1 to any formatted disk in Drive 2. However, if you have the more normal two disk drive set up, then you must copy to the Multidos disk in Drive 0 and then re-copy it from there to a different disk. In summary, this utility is versatile and does what it says, but not perhaps with the usual user friendliness of a normal commercial program.

OUTHOUSE – NOT AS IT SOUNDS!*

For some time we have been a little concerned regarding the publicity given to certain arcade games. In this day and age if one does not cross ones t's and dot ones i's in sales literature then somebody or other is going to throw something at you, and yet it seems that some arcade game publishers quite happily get away with exotic game photographs of the action, when in fact the pictures have little or no relation to what goes on in the game. The matter comes particularly to mind with this program, for in fact the title, which is obviously provocative, has little or no relation to what goes on in the game. Outhouse really is a simple bombing and shooting arcade type game with – if you will – the "gimmick" of two persons running to an outhouse and pulling out what is said in the description to be toilet paper. We are stocking it because we feel that the colour graphics are rather good. The little men walking to the outhouse and the ships hovering above are effective. Furthermore, it is, as compared to some other action games, quite easy to play. So we would recommend it for customers who do not particularly want a tremendous challenge in their game playing. The scenario is simple. After choosing whether or not the player wishes to use joysticks and whether there are one or two players, the playing screen appears. In the middle at the bottom is a little hut, above are three or more alien ships and the player's own ship. Little men appear on the screen at the bottom from each side and walk towards the hut. If they are allowed to get there they walk back away from the hut with a stream of paper roll behind them. Each player starts with three ships, three smart bombs and 200 feet of paper in the outhouse. A smart bomb of course destroys all enemies on the screen in the usual way of arcade games. Points are awarded at the end of each attack wave. An extra ship and a smart bomb are awarded for each 10,000 points scored. You lose your ship by being shot by one of the enemy ships or by collision. Skill level increases with each wave. The instructions say that your shots must not hit the paper, but we have not been able to quite find out why. Outhouse is a simple game with nice colour, requiring little concentration or skill. Sound is included of course.

DEMOLISH – AN OLDIE

This is a TRS-80 colour version of a very old concept. But even old ideas, when they are put on to new colour machines, attain a fresh interest. This game has been known by many different names, Blockade is the first one that we can remember. The idea is that you have a wall on the top of the screen so many bricks thick. At the bottom you have a bat which you control, normally with the arrow keys, but in this program only a joystick may be used. The bouncing ball is provided by the machine. The idea is that you aim the ball at the bricks, slowly demolishing them as the ball hits them. If you miss the ball, then it counts as a point against you. You have five lives. In other words, if you miss the ball five times the game is over and you have lost. On the other hand, if you can demolish the wall before your five lives are up, then you win. There are two colours of bricks and of course there are a finite number. It follows, therefore, that if one erases all of the bricks every time, then one finishes up with the same number of points. Hence, at first sight there would appear to be little point in playing this game against a contestant. However, the author has included in the program a large number of skill levels, namely ten. The top level is extremely difficult to attain, hence when one player is competing against another it will not be so much a matter of how many points he can get, but how many skill levels he can go beyond his opponent. Sound is included. It is hard to estimate this game. Some people will think it is a re-hash of an old one and of little interest. On the other hand, the addition of colour adds a lot. The rather unusual method of scoring, which in itself flows from the colour feature, may well add additional interest. The program is written in machine code, so speed is quite impressive.

BALLOON ATTACK – SOMETHING DIFFERENT

The comment above to the effect that this game is a bit different does not really refer to the contents of the program, but more to the presentation. The game itself is a simple one, it may be used either with keys or a joystick, which are used to move the player. Everything and his uncle falls from the sky and the object of the game is to avoid these falling objects. Two hundred points are given for every bomb avoided and you lose one thousand every time you get hit. The concept of the Balloon is that the bomber is flying high in his red balloon dropping bombs on pedestrians. The game is fair, so far as enjoyment is concerned. The graphics are quite good, particularly as they are in colour. The importance of the package is that it is sold with a booklet which contains fully commented source code. In other words, we would assume that customers would purchase it not primarily for the enjoyment of the game, but more as a learning tool for writing machine code games on the Colour TRS-80 machine. Most of the code in Balloon Attack has been written with a view to illustrating certain aspects of coding on the machine. For instance, all of the routines that draw a figure on the screen have purposely been written in a different way so as to show the reader some of the different ways in which typical routines may be written. The program utilizes the interrupts for the timing and a jump table to control the game. All of the main character movements are placed in a program loop and each routine is executed on a timed basis. The booklet that comes with the program starts off by breaking down the program into manageable chunks. The main subroutines are then listed and this is followed by the fully commented source code of the program. The value of products like this, of course, is chiefly dependent on the value of the source code comments. We thought, therefore, that you might like to see a few lines as follows:

```
KEY 1   LDA    DEMO     ; Check to see if DEMO mode
        BNE    DMOVE    ; If so generate a random move
        LDA    JOYSTK   ; Get joystick flag
        BNE    JOY2     ; Branch if joystick
        LDA    # $BF    ; Enable bit 6 column of the keyboard
        STA    $FF02    ; Strobe the keyboard
        LDA    $FF00    ; Get the row values
        ORA    # $80     ; Mask off joystick value
        CMPA   # $F7     ; Is the RIGHT arrow pressed?
        BEQ    RIGHT    ; If it is jump to move right
        LDA    # $DF     ; Enable bit 7 column of the keyboard
        STA    $FF02    ; Strobe the keyboard
```

In summary therefore, Balloon Attack is more of an educational exercise than it is a game and as such, of course, fills quite a need. It is a pity that there are not more programs like it around.

QASM – A BRIDGE TO MACHINE CODE

This program is aimed at two types of customers. The first is the one who feels that he has mastered the Basic language and wishes to turn his attention to machine code, but is not quite sure how to go about it. The second is the experienced machine code hacker. For the second category, QASM is essentially a collection of sub-routines plus a list of equates. The idea is that the equates are loaded into the editor and called as necessary. At run time QASM itself is loaded in addition to whatever program has been assembled and, of course, the equates call QASM.

For the customer who is just starting to get his feet wet in machine code programming, QASM will prove to be a godsend. The difficulty that a lot of people have is trying to get their mind away from the ease and almost English like syntax of Basic and into the idea of using registers and various other functions for manipulating the data. Although this catalogue is not intended as a tutorial, people may be interested to know that a very good way of bridging the gap between Basic, in particular, but no doubt other high level languages as well, is to buy and use a programmable calculator. These are not quite as popular as they used to be because we now have pocket computers, but you can still buy them. We are more conversant with the Texas Instrument SR series but these remarks apply equally well to the Hewlett Packard. With these calculators one is forced to use registers rather than variable names. Also it introduces one to the concept of indirect addressing in a moderately painless fashion. Anyway, this is all by the by, particularly in the context of the description of this program, because QASM will, to a large extent, save you the cost of a programmable calculator. In other words, QASM forms a bridge between Basic and machine code.

Those readers who use assemblers may skip the next paragraph or two because it is necessary for us to explain some of the mechanics before those customers unacqainted with assembly can understand what QASM is all about.

In a Basic program, if one wants to call a subroutine then one uses the command GOSUB and follows it with a line number. If one wishes to branch or jump to another section of the program without a return, then one uses the statement GOTO. One of the big differences of assembly language (incidentally, "assembly language" and "machine code" or "machine language" are all used pretty well interchangeably) is that one does not define a line number to which a jump, conditional or otherwise, is to be made. One defines it by giving it what is called a label. Usually this is a mnemonic of the function of the subroutine. If one has, for instance, a subroutine that performs a SIN function on a number in a particular register, then one might well call the subroutine SIN. Furthermore, it is often very useful to make a mnemonic description label equal to something other than a subroutine. Take, for instance, the situation where a program is frequently calling something in ROM. For example, in cassette work the better known ROM routines are clustered around the 200H area of ROM. A call to 212H turns on the motor of the cassette on the Model I, a call to 284H writes the tape leader, a call to 264H writes one byte from the A register and so on. It is perfectly possible in a program if one wants to turn on the cassette motor simply to assemble the instruction CALL212H. However, if at the beginning of the program one has made 212H equal to the label MOTOR then obviously the program is going to be much more readable, in that one can CALL MOTOR. Hence, most people use the Equate command in the assembler to set up labels, both within and without the limits of the program.

QASM consists of two separate sections of code. The first is in what is called source form and it may be loaded into an assembler. It consists of a large number of equate statements. There are about 110 or so in all. These are loaded into the Editor/Assembler that the customer is using before he starts to write his program. The program is then written using as many of the equates as the author wishes and then assembled in the normal way. When the thus written program comes to be used, the other section of QASM is loaded in addition to the home written program. The address of the equates tie up with the addresses of QASM and, as QASM and the program are both in memory, the machine will consider the two to be one. In other words, that QASM and the custom written program are one program. This is an extremely fast way of writing code because over 100 subroutines have already been written for you. This no doubt why Mr. Woodruff (who also wrote Horolog, Astrolog and Astronomical Calender) used the acronym for "Quick ASeMbly". More important than speed of assembly however, those people who are just starting to write assembly have not only got a large quantity of code already written for them, but it has been labelled in such a way that it is meaningful to a person familiar with Basic. Thus, pretty well all of the mathematical functions are supported as is the random function and even the FOR NEXT loops.

Let us illustrate the use of QASM with the random number. A normal basic statement would be A = RND(20). If you are not familiar with machine code you might scratch your head for quite a while trying to find a way of converting this Basic statement, which you know so well, into the equivalent assembly code. With QASM, it is only necessary to assemble four lines as follows:

```
LD      HL,20
CALL    RND
LD      HL,XA
CALL    FPV
```

The first line stores the number 20 into the HL register, the second line calls the subroutine in QASM, entitled RND, the third loads the address of a pseudo variable XA and the final line calls a subroutine in QASM which puts the random number into the pseudo variable. It will be seen, therefore, that the task of producing a random variable in machine language has been made rather simple because of the help given by QASM.

QASM operates in single precision, it does not support double precision. As we have seen, QASM supports what we have termed pseudo variables, and you may perform pretty well any mathematical function upon them. SIN, COS, TAN, ATN, SQR, SGN FIX, INT, ABS, LOG and EXP, for instance, all carry out the same functions as their Basic equivalent. We have already mentioned that Random is supported, so also are three comparisons, namely compare equally, compare larger or compare smaller. FOR NEXT loops on n, GOTO, GOSUBs and so on are all available. There are also special routines for accepting a number from the keyboard and printing. Strings are also supported. For instance, the common Basic statement PRINT × A$ in QASM language becomes:

```
LD      HL,YA
CALL    PTLIN
```

The first line stores a pointer in the register HL,YA, of course, is the string variable and the call simply prints it out. String manipulation is also supported, such as Basic statements LEN and ASC. The Basic statement READ is supported in a sort of quasi way. Arrays are supported. In the field of graphics, SET, RESET and POINT in QASM are the same as the Basic equivalents.

As we have said, we do not have the space to list all of the calls in QASM, but the above should give a pretty good idea of the extent of this extremely useful utility.

QASM is supplied with a printout of a demonstration program which uses its functions. This is fully commented and would be very useful to people who want to see how QASM is used. Although irrelevant to its function as a demonstration program, the program does in fact calculate the distance in nautical miles on great circle routes.

MILLIPEDE – EVEN IF IT DOES NOT HAVE LEGS

Millipede is an almost exact copy of the well known arcade game Centipede and is Colour Genie compatible only. For those of you who are not familiar with the latter, the action is in some ways reminiscent of Invaders in that the player controls a sort of firing platform at the bottom of the screen which can be moved from left to right. At the top of the screen a number of various insects appear. The object of the player is to kill all the insects, the object of the insects is to kill the player. In addition, in the top half of the screen, is a scattering of mushrooms which will block your fire and that of your opponent. The most important insect is the millipede, which starts at the top of the screen and proceeds down avoiding, or going round, the mushrooms in a rather lifelike manner. We are not quite sure what happens when you hit a centipede in real life. We have always understood that if you chop a worm it turns into two, but this does not happen with a millipede. If you hit a section of it it will turn into a mushroom and, therefore, perform more blocking services. The remainder of the millipede goes on crawling towards you. If you hit another piece it becomes a mushroom and so on. Hopefully you get all of it before it gets to you. Meanwhile other insects have come into the picture, namely a spider, a snail and what we call a "dropper". We have not quite got to the bottom of what the real life equivalent of the latter does. If you hit it it turns into a mushroom. Anyway, the snail and the spider appear randomly from any side and are aimed at you. If you hit them they will be destroyed and, of course, will provide you with different points scoring. If they get to you you are destroyed. All is not lost, however, you have four lives and, therefore, become reincarnated three times. The graphics are good, sound is fair, colour is nice. The action is very good. We suppose the only criticism is that it does tend to follow the original Invaders type idea, but it is an interesting adaptation; after all it is not often you are fighting a millipede.

TYPITALL – YES, ANOTHER WORD PROCESSOR*

The main reason why we have added this particular word processor to our list is that it represents extremely good value for money. It is distributed in the States by Hubert Howe Jnr. (the Monitor series, Database Management etc.) and because of our close relationships with Mr. Howe we are able to introduce the program into the United Kingdom at a very realistic price. In fact you will find that the the present conversion rate the price in England is less than it is in the United States! Bearing in mind that Typitall received four stars in a recent 80 Micro review and is, to a large extent, entirely compatible with Scripsit, the package represents, as we have said, very good value for money.

Probably the easiest way to describe Typitall is to say that it is an enhanced Scripsit. The trouble is that there are so many Scripsits out nowadays that one would have to define which one. The fairest comparison would be to say that it lays well above the original Scripsit, but probably somewhat below the newest enhanced version. Again we would re-emphasize the cost factor. The "normal" Scripsit on disk for the Model I/III is £79.95, the enhanced, or Super Scripsit, is £159.95. You will see from the price in the Index that Typitall is very advantageously priced. Typitall behaves like a vastly enhanced Scripsit effectively for the same price as the low costing Scripsit.

One of the particular advantages of Typitall over Scripsit that we like, is the provision for eleven user definable command keys. Although we would not want to warrant it so, the only deficiency that we found, if it be a deficiency, is that Typitall does not support tape in any way. In general, Typitall has many additional commands over Scripsit. Command format between Scripsit and Typitall is not interchangeable however. For instance, the command in Scripsit to print with a serial printer, in Typitall, causes the screen to be printed on the line printer.

Typitall reads and generates files in the same format as Scripsit. Thus original Scripsit files will load into Typitall with no conversion, and vice versa. This is a particularly useful function because, as we all know (usually to our cost) Scripsit files are in many ways unusual and in almost all ways are totally incompatible with other word processors. Note, however, that (obviously) Typitall is not a code mirror image of Scripsit, hence any patching program to Scripsit, which requires Scripsit code to be in a certain place in memory, almost invariably, will not work with Typitall.

Whilst talking about compatibility, so far as we know, Typitall is compatible with all of the major DOSes, by which we mean TRSDOS, LDOS, DOSPLUS, and NEWDOS 80. Whenever we say this in the catalogue we get into trouble. What we mean by "compatibility", in the sense that we are using it now, is that, so far as we know, Typitall will work with the skeleton versions of the DOSes indicated. We do not maintain, and nor incidentally, do we maintain in the rest of the catalogue that, when we say a program is compatible with a particular DOS, it is compatible with every single aspect of that DOS. We make no apology for this. Modern sophisticated disk operating systems are extremely large, intricate and complex programs. It would be virtually impossible to check out every aspect of them with every aspect of a complex program. Anyway, so far as Typitall is concerned, we have used it with the DOSes mentioned and have not as yet found any difficulty.

DOS commands are available from within Typitall. With some disk operating systems, simply by typing the command, with others by exiting Typitall with a return with the buffer intact. Both comments, of course, assume that the buffer is not overwritten by whichever DOS command is carried out.

It is very hard to describe word processors because they are, by their nature, made up of a vast quantity of commands. Typitall contains approximately 70 intrinsic control keys or commands, and around 30 special commands which are used after the Break key has been hit, as in Scripsit. Obviously the usual cursor controls are there. There are eight separate deletion commands, varying from deleting one character to an entire block, or for that matter, to the end of text. Deletion to the next non-blank character is useful, as is deletion to the next character, specified by the user. Paragraphs may be exchanged, as may be blocks. Indeed, lines and words can be exchanged. Typitall supports hyphenation and tabs. Customers familiar with Scripsit will find the normal entry screen of Typitall quite familiar. The tab settings are shown at the bottom of the screen plus six parameters. These tell the operator what line and column he is on, the present line length and width. Of particular use is a running commentary on how many bytes are left free in the buffer.

Typitall may be customized by the user. The software is supplied with a file called TYPIMODE/CMD which can be used to modify many of the variable functions of Typitall. For example, all the default printer formatting values may be altered, the cursor blinking key speed, entry speed, the value of the graphic codes to be printed, plus many other parameters. The changes may be made permanent by storing the new version of Typitall to a disk file. Consequently, to a large extent the user is able to make his own word processing program, customized to his own equipment. Whilst on this subject, one of the most vexatious problems with word processors is the question of printers, and in particular, serial printers. Typitall comes with a serial driver which may or may not suit your serial printer, but if it does not, then the manual, which is some 90 pages long, contains a specimen, or skeleton, program for a printer driver.

Obviously these comments could go on for a long time. There are really only two further matters which must be discussed, however – so long as the reader assumes that all of the commands normally found in a high quality word processor are included in Typitall.

Firstly Typitall has a large section of Help features. There are nine Help screens in all and they can all be called directly from Typitall without affecting the text buffer in any way. Usually they simply list the command key plus the command with about 28 to a page. The first screen, however, is rather impressive. It consists of large replicas of the key symbols and underneath a short mnemonic for most of the control keys. The control key, of course, as in Scripsit, is obtained by pressing the @ sign plus the key indicated.

The final point we would like to mention is that Typitall is what is called a "window" word processor and that is to say, to a large extent the screen forms a window on to the text buffer. Typitall is, of course, only compatible with disk.

MAGAZINE REVIEWS

As older readers of this catalogue will know, Molimerx and the computer press have never quite seen eye to eye on a number of matters. One point of very serious contention has been that some of the magazines, particularly the newer ones, do not seem to require their reviewers to have any particular qualifications.

In case you should think that this is a question of sour grapes, let us make it clear that very few magazines have actually given our programs a bad press. What annoys us most is that when we introduce a particular piece of software into the TRS-80/Genie market, which by anybody's judgement is an advancement of the state of the art, and then send a copy of that program to a magazine, they are seldom able to come up with a reviewer who has the knowledge or expertise to do a proper review. Consequently, that particular piece of software, which may very well be not only important to us, but to all in the industry, does not get a sensible review.

On the other hand, the American magazines frequently do very good reviews on TRS-80 software. Again we would reiterate that we do not necessarily mean, by good, that the review is favourable; it just seems that the writing is more searching and the coverage more extensive.

Accordingly, from October 1983 onwards you will see some program titles with an asterisk beside them. Typitall is an example in this issue. What this means is that we have re-printed reviews from American (or if the opportunity arises, from English) magazines and that these are available without charge from us. We would like a stamped addressed envelope, however, if you are not ordering at the same time.

Obviously it is very hard to modify our existing catalogue plates to insert the appropriate asterisk. Programs of which we have reviews and which were released by us prior to October 1983 are: EDAS 3.5, Enigma, Super Utility Plus, Liberator, TBA, Custom TRS-80 Book, SECS, SOLE, Super Scripsit, FED, Basic Faster and Better Book, Powerdot, C Compiler.

GIFT COUPONS

This year Molimerx is selling Gift Coupons. They are in two denominations, £15 and £5. There is no extra charge, so if you wish to have a £15 coupon you just send us fifteen pounds. They are redeemable for any merchandise sold by Molimerx, at any time. Coupons are, of course, perfect for giving as gifts to those people of whose taste in programs the giver is not quite certain.

GRAFIC – GRAPHIC CHARACTER DEFINITION FOR THE COLOUR GENIE

Grafic is a utility program which, as its name implies, is used for the definition of custom design of graphic characters on the Colour Genie. The machine, in its interpreter, already contains routines that do carry out this chore. The advantage of Grafic is that you can design a **screen** and not only design a screen, but design it in a choice of eight colours and eight tints, plus do it very easily. If that is not enough, Grafic will permit the user to save a screen out to tape. It can then be re-loaded under the System command and will automatically orientate itself into the high resolution graphic memory, from whence it can be accessed with the CALL command. In summary, therefore, Grafic gives you the ability to design and colour a screen to your own requirements, using your own customized characters.

Sixty-four characters may be defined, they use the CHR$ numbers of 128 to 191. When you first enter the program there are four options available. The first is to dump to tape, the second to colour the screen, the third to design the screen and the fourth and last is the command used to design the user definable graphics. Taking the last one first, when the command is entered you will be faced with a screen at the top of which is a blue cursor. You may or may not have some graphics defined. They are built up in chunks of 16 characters. When you get to the actual definition stage a grid will be displayed. By way of the arrow keys one can proceed around this, setting whichever blocks one requires, thus building up your character.

The penultimate option, you will recall, is to design the screen. This is not a great deal more difficult than designing the character. However many characters have been defined, they will all be displayed on the screen and can be moved to any position. At the same time as shifting your characters around you may also add text. As we have said, the individual characters may be placed anywhere you wish. If they had been defined in a certain manner and were made to butt against each other, far larger designs may be made. The final command, apart from saving to tape, is to colour the screen. When you enter this mode a set of 16 colours will be displayed, as also will be the screen you have designed. Two cursors are supplied, one is placed over the colour required and another over the appropriate character. That colour is, therefore, set for that particular character and you go on to the next.

All in all Grafic is a very useful utility, particularly for those who are concerned with colour and graphics. As one of the many charms of the Colour Genie is just that, this program should have a lot of appeal.

GENETICS – EDUCATIONAL

This program is entirely of an educational nature. It has no interest for anybody outside of that area. It is principally aimed at biology pupils of 16 and over taking GCE or CSE although it might also be useful at higher levels. The object of the program is that it should be used as a type of electronic blackboard by either teachers or pupils in order to demonstrate and re-enforce the principles of Mendel's Laws of Inheritance for single factor inheritance. Additional purposes are to establish the various permutations which can result from different crosses, and finally Genetics may be used as a ''Genetics Calculator'' for pupils to check their own calculations.

The program enforces the basic mechanism of single factor inheritance according to Mendel's Laws of Inheritance. Users can investigate complete dominance, incomplete dominance and the effects of sex-linkage. For each of these types of inheritance mechanism in the program, users will be able to input the genetic constitution of individuals in a breeding situation. They will then see all the possible permutations of offspring possible from such a cross. The results will give not only the genetic constitution of the offspring (Genotype) but also the actual appearance (Phenotype). There are suitable pauses in the flow of the program to allow users to calculate the results for themselves before being given the answers. A table of results is called which allows users to record the results of a particular cross. This is an area where the addition of a printer routine would be useful, but not vital.

The program can be used at a teacher's discretion obviously, but some familiarity of the various mechanisms and terminology of genetics is required. It should be noted that this program aims to present information which would not be achieved in nature. It produces the combinations which **would** result if **chance** occurred in every possible way for a particular cross.

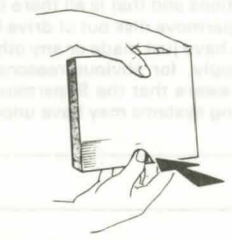
The above describes the first section of this Genetics program. There is, however, another section which was written to overcome some of the problems arising from breeding organisms in a school environment for genetic investigations. It does not replace the need for breeding but simulates a more rapid reproduction rate. For instance, where the first part of Genetics shows all of the possible offspring produced from a particular cross, this program produces offspring randomly and to this extent is more like the real world. The user is still able to decide on the genetic constitution of the breeding parents but the progam will then produce the number of offspring requested (up to 32,000) on input. These offspring will be produced at random in a similar way to the natural method of production. The user can also request in the second part of Genetics a simulation of a random selection of breeding population. Whichever mode is used the total offspring produced and, their proportions are tabulated at the end of each run, that is to say, percentages and totals of genotypes, phenotypes and numbers of genes and offspring are shown. We would once again emphasize that this program is intended entirely for those interested in education, even if the description did sound somewhat like a game of Life!

ACCESSORY

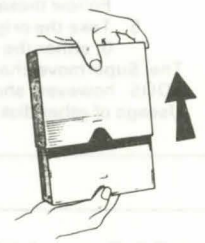
Unique Disk Storage Boxes

It is surprising in the computer industry that the simplest of accessories tend not to get changed. Once a particular design is formulated everyone seems to stay with it. Perhaps it is because we are such a young industry. Take disks, for instance, we are at the moment trying to persuade BASF to produce standard disks but in a coloured outer cover. For some unknown reason this cover is always black. In the United States they have started to use colours and there is no reason why we should not here. Anyway, this is not the point at issue.

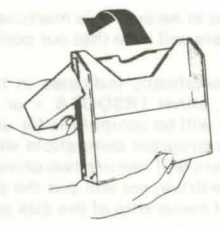
A little while back we came into contact with an extremely useful disk storage box to replace the more regular one, with which we are all familiar. This new one, which is called SEE-10, has a plastic catch, which is shown in the first illustration. This is automatically pressed when one grips the box and the top can then slide up, as in the second illustration. The back folds down and then slips down about an inch or so to form a stand. The most useful part of the box however, is the fact that the front flap hinges open, as shown in the final illustration. If you imagine using it, it means that you can flip through the disks that are in the box without any difficulty at all. The whole thing is made in a high impact plastic which, although presumably similar to the normal boxes, does have a rather pleasant feel to it. Finally on the construction, there is no cradle in the box so it does not require any room for a hinge. It therefore finishes up being somewhat smaller than the regular box and in fact measures 5 ½" high by 6 ¼" wide by 1 ½" thick. It is a very nice and useful accessory and is particularly relevant at Christmas time. Half a dozen of them would make a very nice gift. The box comes complete with an adhesive label for the outside. At the moment we are stocking them in a beige colour.

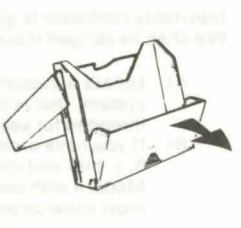


Press to Release



Withdraw to Full Extent





Ensure Outer Cover is in Correct Position Before Resting on Surface

CESIL – COMPUTER EDUCATION IN SCHOOLS INSTRUCTIONAL LANGUAGE

Cesil consists of a software interpreter for the Cesil language. The instruction manual supplied with the program is not instructive. The user is assumed to at least have some knowledge of the Cesil language. The interpretation is through the Basic interpreter which, of course, is already in the machine. Cesil is a language taught in schools and colleges, particularly to those pupils who are studying computer science as a subject. Cesil is, therefore, a fundamental language to be interpreted. The author, in fact, used the Computer Education in Schools and Computer Studies Book One from ICL-CES as a guide. Before we describe the interpreter we wish to repeat that the package is not instructional; it does not teach the operator how to program in Cesil or any part of Cesil. The instructions simply show the operator how to use the interpreter and only to this extent could this package be called instructional.
There are fifteen prime commands supported by the interpreter, as follows:

TEXT	ERASE	DATA	LOAD
SAVE	LIST	EDIT	RUN
EXIT	PRINT	OBJECT	MEM
*	#	HELP	

The commands are, of course, entered from the keyboard and after the interpreter has been loaded. Upper case only is recognised. Various editing commands exist, but they are, at least compared to the Basic interpreter in the machine, quite rudimentary.
It may be helpful if we give a few brief comments regarding each of the commands listed.

TEXT
This command allows the user to enter CESIL text into the computer to be stored in memory.
ERASE
To a large extent the opposite of the above. Erase allows the user to erase a CESIL program and all variables from memory.
DATA
The command by which data is entered into the memory of the interpreter to be later used and called by a CESIL program.
LOAD
For loading a CESIL program from either cassette or disk.
SAVE
The CESIL command for saving an existing program to either cassette or disk.
LIST
Almost identical to the Basic command.
EDIT
An extensive command allowing the user to edit fully any part, line, column or store location in any area of the CESIL program.
RUN
Enables execution of a resident CESIL program.
PRINT
Dumps a list of the program to the line printer.
OBJECT
A visual compiler printing out the line numbers that are currently being processed.
MEM
Similar to Mem Size in Basic.
HELP
Lists to the screen the available interpreter commands.
EXIT
Self explanatory.

SUPERMOVE

We get into the worst trouble with customers over this program. It is a proprietory DOS which comes up very clearly with instructions when it is booted in drive 0 and there is a fluorescent label on the disk saying that it has to be booted in drive 0. In addition to this, there is a notice on page 111 of the new catalogue (and on another page in the old) entitled "IMPORTANT", which explained the procedure.
Notwithstanding the above, we still get customers complaining that we have supplied some program called "Supermove" in the place of the one they have ordered!
Once again, therefore, the procedure for using the software supplied on Supermove is as follows:

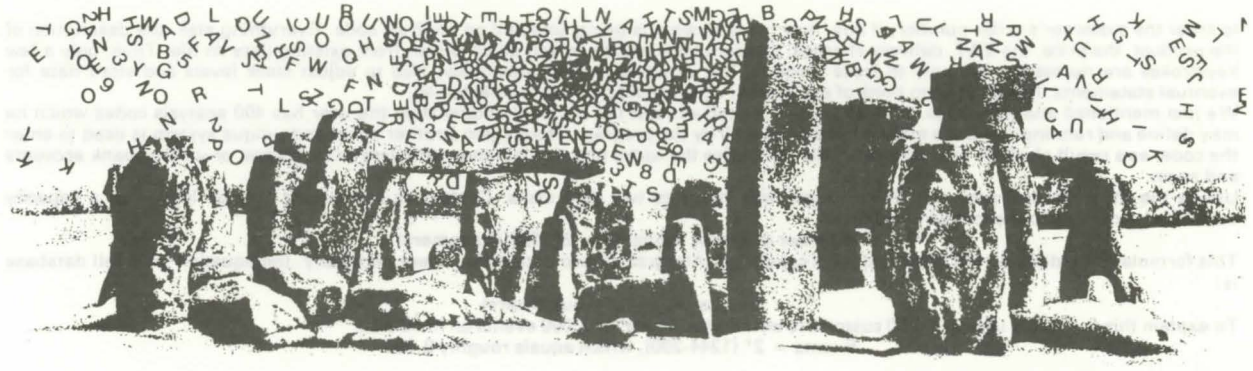
1. Prepare a TRSDOS disk suitable for your model. That is to say, for the Model I and Genie machines TRSDOS 2.3 and for the Model III TRSDOS 1.3.
2. Insert the Supermove disk as supplied by us in drive 0 and your TRSDOS in drive 1. If you have only one drive then insert the Supermove disk in drive 0 only.
3. Re-boot.
4. You will now be shown a screen with our logo, name, address and so on, then this will clear into a page of instructions. Follow these instructions and that is all there is to it.
5. Take the original Supermove disk out of drive 0 and store it in a safe place. When you have a system disk placed in drive 0, either the one you have just made or any other, press the Enter or New Line key.

The Supermove that we supply, for obvious reasons, expects a TRSDOS disk as the target disk. Owners of smal-LDOS and LDOS, however, should be aware that the Supermove disk can be treated by them as an ordinary LDOS formatted data disk. Useage of other disk operating systems may have unpredictable results.

MODEL 4 SOFTWARE

Inevitably confusion is going to arise over this machine, in that it can be used in the Model III and Model 4 modes.
We shall be obliged if customers will note that our policy will be as follows:

A) Unless a customer specifically indicates in his order that he intends to run the software under a Model 4 operating system, that is to say, either TRSDOS 6. × or CP/M (when it is available), the program that we shall be shipping will be intended for use, and will be compatible for use on the Model 4 in the Model III mode.
B) If you have ordered a program compatible with 6. × then the disk you will receive will be a straightforward formatted 6. × disk and customers will require two drives with which to use it properly. In the unlikely event of a customer having a Model 4 with only one drive, we will put the program on to a 6. × system disk, but at the time of ordering the customer must show us proof of ownership of the disk operating system.



LEAVE THE STONE AGE BEHIND!

MACHINE LANGUAGE
BUSINESS SOFTWARE

SYSTEM II

FOR TRS-80 MODEL III

FAST-NO FILE HANDLING! FULLY INTEGRATED!

These comments are intended by way of an update on the position with regard to SYSTEM II which was first introduced two or three months ago, and in the new catalogue is mentioned on page 123.

As with most microcomputer software, the actual release dates of SYSTEM II have lagged behind the projected ones. The two most important parts of SYSTEM II, that is to say, Sales Ledger and Stock Control, are ex-stock, but the Purchase and Nominal Ledgers will not be released, in the case of the former until the end of October, and we are expecting to get the Nominal Ledger around about Christmas time.

Due to these delays, even though they are in microcomputer terms comparatively short, we are undertaking to update all modules which require to be updated without charge until such time as the System is ready for sale in its entirety. In other words, if a customer buys Sales or Stock, or both, now and then when Nominal is released at the end of the year, it is found that the existing Sales or Stock require to be changed, then we will be supplying new disks without charge. These remarks also, obviously, apply to bugs, but perhaps less obviously also to any improvements in the System. For instance, the zero and O in the Stock Control Module were treated internally as the same characters. This had certain advantages in the program (normal ASCII is not used), but when the Stock Control actually hit the market a number of customers felt that whatever advantages there were to the procedure were outweighed by the fact that it produced a rather peculiar sort. The situation was changed in the Sales Ledger, where a zero and an O are treated separately. This had to be taken back to the Stock Control because of the interact option and, hence, all customers who bought Stock Control were sent a free copy, plus certain conversation services for any existing data. In other words, what we are saying is that SYSTEM II is a classic example of the support that Molimerx gives its software. This support is described elsewhere in the catalogue, but perhaps requires re-emphasis regarding SYSTEM II.

Just as the Stock Control module was a breakthrough in its field, so Sales Ledger is even more so, in its marketplace. We know of no other Sales Ledger available for our machines which shows such fantastic ease of use as does Sales Ledger. As promised before the modules were even written, the same method of four letter entry, as is used in Stock Control, is carried on into Sales Ledger and will carry on into Purchase and Nominal. The whole suite, therefore, is literally the ultimate in user friendliness.

Perhaps the most important factor in this regard is the ability of the operator to move from one phase to another even without having completed the first. Thus, if one gets halfway through entering an invoice and decides to change one's mind, then it is only necessary to enter a new command and the existing work is discarded.

At one time it was fashionable to brag in sales literature that a program was menu driven. The big sales feature of SYSTEM II is that it does **not** contain a menu. It is not necessary. As the whole suite is written in machine code there are no files to be opened or closed and, so long as one keeps the four letter mnemonic commands in mind, then one does not have to re-route through a menu. Even if you forget there is a Help page available at any time. This saves an amazing amount of time and for those who supported the menu driven route, is something of an eye opener.

Another important part of Sales Ledger is the fact that, unlike most other sales ledgers written in Basic, it will issue invoices in addition to statements. Hence, one operator in one sitting can do everything with regard to a transaction and, more importantly, all of this work emanates from one entry only. Thus, the issuance of an invoice not only prints the invoice, but adjusts the stock levels, stores the information for a statement.

Not only does all of this emanate from one sitting, but also the operator's time at the computer is cut drastically because, again unlike other packages, SYSTEM II does not require the operator to enter into the computer any information which the computer already has on file. A rather novel system called "ping-pong" has been devised whereby, for instance, when one issues an invoice it is only necessary

to enter the customer's order number, if any, how many of what is being sold and an analysis code. Everything else, the description of the product, the price, the VAT, delivery charges, discount level and so on will all be drawn from existing data on file. Thus, only a few keystrokes are necessary, not only to issue invoices, but as we have said previously, also to adjust stock levels and store data for eventual statements. It is difficult to think of any system which could be more simple to use.
We just mentioned analysis codes. If Sales Ledger is used without the Nominal Ledger then the user has 400 analysis codes which he may define and running totals are maintained on them all by the program. Here again a rather novel and unique system is used to enter the code, as a result of which one can essentially categorise the codes into, for instance, software or hardware, or various bank accounts and so on.
Unlike the Stock Control program, Sales Ledger will integrate two data disks. Customers and events may be logged to a capacity calculated according to the following formula:

Number of events available = 2* (622-Customers).

This formula is per disk. As the Sales Ledger is capable of intergrating two data disks where necessary, the equation for a full database is:

Events = 2* (1244-Customers)

To explain this further, a user with 200 customers would have space for 2,000 events on his disks:

Events = 2* (1244-200), which equals roughly 2,000

Thus say 9 invoices and 1 payment can be logged for each customer in each period. Statements are usually produced once a month of course, hence the period would be one month. It is important to note that the number of events is the criteria. If one had only one customer, then that customer could use all 2000 events in one month. On the other hand, if one has a more reasonable number of customers and some consumed more events than others, then this is also acceptable as long as the equation given is not exceeded.
Demonstration packages are available for both the Stock Control and Sales Ledger. They are, of course, always here at Molimerx in Bexhill, and customers are welcome to come and play to their hearts content in the demonstration room. Alternatively, demonstration packages are available to all of our dealers, some have them, some do not. If your dealer does not and you wish to have a demonstration then make sure he writes to us for the appropriate package. Sales brochures are also available on the whole of SYSTEM II.

UPDATES

PASCAL 6.0

This is the much anticipated 6.0 version of our Pascal written by Mr T J Bourne. As always, any previous bugs have been fixed. Due to the lead times inevitable in this business, these comments are being dictated prior to our receiving the actual software from Mr Bourne. They must, therefore, to some extent, be considered as provisional. If any of our comments are vitally important to a customer, then they should call us prior to ordering.
Subject to the above, Pascal 6.0 now includes Records, but not variants. The WITH statement is also supported. Other compiler facilities should be mentioned particularly that Sets and Boolean arrays now occupy one bit per value rather than one byte. In the Editor, in Insert mode, the Enter key now inserts a new empty line after the current line and moves the cursor to the beginning of it. The Find command leaves the cursor on the beginning of the string if it is found and a subsequent Find command, with no string specified, will find the next occurrence of the same string. At Run Time, under Error Detection, a restriction has been added, namely that the C Compiler option to give compatibility with versions prior to version 5.0 has now been removed. The main consequence of this is that array declarations and references must now use square or dotted brackets, and that a CASE statement must now either allow for all possible values, or include an ELSE clause.
When Mr Bourne first spoke to us about 6.0 he indicated that the new version would add support for file buffers and the GET and PUT statements. This depended on the availability of RAM. As this listing goes to press we have heard that Mr Bourne has been able to find some more room and that, subject to coding, these additional enhancements will be included. However, as we said at the beginning of this note, customers should telephone us if any of these commands are of great importance.

SHARE ANALYSIS

The last version of this program was delivered to us by Dr Campbell earlier this year and, unfortunately, he died before he was able to correct some bugs in it. We have now debugged it and it is available for sale again.

FAIRYTALE

There are three Fairytale Adventures, Fairytale, Dreamworld and Wonderland. It is to be confessed that, as they were written with a slant towards the youngsters, they did not sell as well as we had hoped to begin with, but now they are gaining in popularity very considerably, not only on the TRS-80 and BBC machines, but shortly on the IBM as well. Apparently parents are not as blasé as they had thought! Due to the increased interest, the author has converted the tape versions over to disk and these are now also available. At the same time, Keith Campbell, the author, took the time to prepare what we can only describe as particularly unique forms of tip sheets. There is one for each of the three Adventures and they are all in rhyming couplets. Adventure tip sheets have traditionally been just that, that is tips, not instructions. Keith's tips, however, take this a stage further. When a player gets stuck and, therefore, frustrated, it will hopefully be a pleasure to get unstuck! The Fairytale tip sheets are very ingenious.

LDOS 5.1.4

5.1.4 was issued on the 1st September. One of its most useful additions is a command called QFB for Quick Format and Backup. This very nice utility carries out a format at the same time as it backs up. Thus it formats a track, verifies it, reads from the source disk then dumps and verifies to the destination disk. QFB is only applicable to floppy disks, hard drives cannot be used. The backup must be a mirror image and two drives are required. Subject to these stipulations, however, it is a very useful utility. Three or four parameters are available. The first specifies whether or not unused cylinders are to be read and copied to the destination disk, the second and third concern the depth of verification. The familiar Query parameter is also available.
5.1.4 includes "without charge" the original FED. FED II and LS-FED II are sold separately. For anybody that missed it, FED is an all purpose file editor used for displaying, printing and modifying existing files on disk. It works at a file level, not like zapping programs at a track or sector level. 5.1.4 contains changes in pretty well all of existing LDOS files whether system or otherwise. We would, therefore, recommend a certain amount of caution in switching over to 5.1.4. Certainly we would suggest that users who wish to upgrade should keep 5.1.3 on hand for sometime. We have noticed one or two peculiarities when using 5.1.4. No doubt these can be put down to finger trouble, but they have been sufficiently worrying for us to retain use of 5.1.3 for particularly critical areas.
There are a number of other changes, but the most important is that the floppy disk driver has been adjusted to take care of running the Model 4 as a Model III at fast clock speeds and to handle the new design of the FDC board on the Model 4. In other words, when 5.1.4 is used on the Model 4 in Model III mode, in a number of applications the higher clock speed will be apparent. This can make some games awfully hard to play!

SIR

Many parts of SIR have been completely re-written in the new 1.3 version; in particular multi-column sorts now execute much faster, sometimes as much as 30% more. As a matter of fact, they are now so fast that it is difficult to register the time improved except with high capacity files which, of course, is where the improvement is most valuable anyway. Sorting a thousand records on files containing random strings and random 4 to 6 digit numbers takes a maximum of 1.7 seconds. With two thousand records it is proportionally rather faster at 3.1 seconds.

Since the issue of SIR there has been, in customers' minds, some confusion on the differences between SIR and ISS. This is unfortunate because, as we have said before, although SIR uses some of the sort algorithms of ISS, it is an entirely separate and distinct program. ISS, for instance, was capable of only nine user columns, all of which were kept in memory. SIR, on the other hand, keeps its data on disk in a relative database format and has the ability to select from 25 user columns. What is more, there may be any number of them in any order and subject to a maximum display or print line of 128 characters.
It will be recalled that the original write-up on SIR, page 129 of the new catalogue, concentrated on the effect of using SIR. In particular it was compared in some respects to a spreadsheet program. Hence, the following notes on the inside workings of SIR might be of interest:

1. For the convenience of owners of ISS, the dozen or so single character commands used therein have been maintained in SIR.
2. Program modules are loaded as required without user intervention.
3. The program gives a running commentary on its activites so the user is never in the dark as to what is going on.
4. All data disk input/output is monitored with a Retry option to cover the eventuality of a disk or operator error.
5. New records may be reviewed and if necessary amended before writing to disk in Batched mode in either fixed or user determined numbers.
6. a) When updating records, column selection permits only those required for a record identification and those to be amended to be displayed.
   b) Of the columns to be updated, in the order most convenient to the user, he may if he chooses have only a selection presented for amendment over a run of records.
   c) Identical entries in columns in successive records can be entered with a single key stroke.
   d) Columns may be left blank.
   e) Records marked for updating may be sorted so that they are presented in the most convenient order.
7. All data entries are validated as a character by character basis. If a key is struck which does not comply with the user specification for the column a back arrow appears on the screen, following the offending character and no further key is accepted until back arrow has been typed to delete it.
8. Records may be marked not only for further processing, in other words, updating, but also as an adjunct to record selection. If, for example, the requirement is a house with four bedrooms in one area in a given price range, or a 3 bedroom flat in another, in a different price range, the Category and Range commands could be used to select the houses. After marking them with a single key stroke the process can be repeated for the flats and the two sets of selections combined in sorted order with another single key command.
9. Records may be marked singly or in blocks and the marking deleted globally or individually.
10. In Single Records mode, records marked in a normal display of selected columns are displayed or printed out in full vertically. In other words, with one column name and its content per line, or in further words, precisely the opposite to the normal SIR display, which is in columnar form.
11. Frequently used record/column selections can be written to disk as a temporary SIR file for quicker access or the current sort written as a file accessible to most word processors. In Single Record mode, the temporary SIR file option is replaced by one to split the file with marked records in one file and unmarked in a second.

LDOS EXTENDED SUPPORT

Logical Systems seem to be quite incapable of making up their minds with regard to extended support. Some weeks ago we were informed that extended support would be cancelled and that the Quarterlies would be henceforth sent out on a subscription basis. We have told a number of customers this and, indeed, subscriptions have been paid and, therefore, will have to be honoured.
Literally as this list went to press, however, we have been informed that a new arrangement will become effective in October. What this new arrangement will be, as of this minute we do not know. More to the point, we do not know whether subscriptions should be sent to us or to the United States.
We deeply regret this absolutely ridiculous position and can only hope that the position will be clarified in the not too far distant future.

HOW TO DO IT ON THE TRS-80

This is a book and is in fact about the sixth ''Mysteries'' book from IJG. As a matter of fact it seems to be the first one in which the word ''mysteries'' does not appear in the title – this is not its only peculiarity. Firstly it has a very provocative title, about which perhaps the less comment the better. More importantly it is a very difficult book to describe. Even its format is unusual. There are no page numbers, even though it weighs a full kilo. It is certainly considerably thicker than any of the other Mystery books. The way you get around it is by a combination of acronym, mnemonic and encyclopaedia type lay out. For instance, suppose you decide that you want to know something about an Editor Assembler for the Colour Computer, than the index will tell you to look under EDCE. Then in encyclopaedia form you go to EDCE alphabetically and there find what you are looking for. Similarly if you want to know about asterisks in Basic (or Arithmetic Operations In Basic!) you are directed to AOIB. As with any judgement on a book of similar subject, an opinion must be entirely subjective. We personally found this to be an extremely annoying way of getting around a quite immense manual. The other side of the coin is without a doubt, the book is very comprehensive, in fact so much so that one wonders whether it is not too comprehensive. Essentially it attempts to cover all aspects of activity on the TRS-80, including hardware and software. We would be inclined to doubt whether any single book could do this, but none the less there is a lot to be said for having everything in one spot.
A definite plus for the book is that it covers the new Model 100. Most people who have this machine at the moment will not have had it for very long and the section on it, which comprises probably a fifth of the book, will be very valuable. We still have great difficulty in getting our minds around searching for information on the RS232 and having to look it up under RSWI. If this gives you difficulty too, it stands for ''RS232 What Is It''!
LDOS is now also sold by Tandy, hence a number of the references include special comments on that disk operating system.
Finally, one must obviously mention the author, who is William Barden Jnr. He is a respected author on all matters appertaining to the machines in the TRS-80 range. No ghost writer is mentioned in the prefix, so one assumes that the book did indeed come from Mr. Barden's pen, but if this is so, in our estimation it does not come up to his other books.

6.0 PROGRAMMERS GUIDE

This book is written by Roy Soltoff, who also wrote the majority of LDOS and, therefore, TRSDOS 6.0. It would be hard to find a more qualified author than that! The book contains over 200 pages packed full of technical information on TRSDOS/LDOS version 6.0 disk operating system. In fact, there is so much information in the book that one wonders whether it would not have application to anybody interested in this DOS but it is at the assembly language programmer that it is principally aimed. Version 6.0 provides access to the DOS by way of Supervisory Calls which are extremely easy to use and are reminiscent of the Model II TRSDOS. Hence, it would take very little machine code or assembly language programming knowledge to be able to use SVC's. There are six chapters covering: An Operating System Overview; Device Input/Output Interfacing; Disk Drive Input/Output Interfacing; DOS Directory Structure, Disk File Access and Control; Interfacing via the Supervisory Calls. The Appendix includes topics such as Disk Load Module Format; Memory Bank Switching; Interrupt Task Processor Interfacing; System Disk Boot Track. In addition to all of the above, three complete filter programs are included in the Appendix. In summary, if you want to know anything about the inside workings of TRSDOS/LDOS 6.0, this is the book for you.

In order to help customers in a decision whether or not they should buy this book, we should make a few more comments about Supervisory Calls. Any operating system, or interpreter for that matter, is made up of a rather ghastly mess of routines, which may or may not be interlinked with each other. The interpreter in the TRS-80, for instance, has often been linked to a gigantic plate of spaghetti. This is in no way intended to be derogatory, it is simply in the nature of the beast. Normally, therefore, it is quite difficult to find ones way around and, indeed, whole books have been printed on just that one subject, so far as the Tandy interpreter is concerned. Continuing the analogy of the interpreter a little further, when one has got knowledge of the appropriate addresses, then a Call can be made from a machine language program to that address. None the less, the changes, if any, to registers are often not known and the whole procedure is something rather less than scientific. DOS, although not an interpreter, also contains many useful routines but certainly with the Model I and Model III a rather similar situation arises, when one tries to make use of the routines, as arises when one dips into the interpreter. The Model II disk operating system provided the first break away from the traditional, for Tandy, system in that it provided, a rather restricted, number of Supervisory Calls. TRSDOS or LDOS 6.0 has gone a full step further in ease of access to the DOS routines, in that an SVC may be called simply by loading the accumulator register with the appropriate SVC number and then performing a machine language Restart 28 instruction. As we have touched on above, it is necessary to know what the routines do to the registers and this is where a book such as Roy's manual comes into its own. Let us take an example; supposing one wishes to display a byte on the VDU. The SVC and mnemonic for this is @DSP and the call number is 2. Thus, we know we only have to load 2 into the accumulator and execute an RST 28H. The manual, however, tells us also that the byte to be displayed must be in the C register and that on return, if the Z flag is set, the operation was successful and if it is not, then the A register contains the error number. We are also told that the DE register pair is used. The above information is listed for all of the Supervisory Calls. There are close to 100 of them at the moment and more will be added from time to time in later versions of 6.0.

We hope that the above explanation will help readers who are not familiar with assembly language to understand that using a supervisory call does in fact only require very little knowledge. Essentially, the machine does all the work for you. Hence, this manual may well be of considerable instructional use as well as being a veritable mine of information on this disk operating system.

HINTS AND TIPS CHRISTMAS 1983

Eaca have issued an entirely new set of ROMs for the Colour Genie. It is believed that they have corrected all known bugs in the old interpreter and a large number of enhancements have been made. The technical sheet sent with the ROMs rather loosely states that all of the enhancements are upward compatible with all of the existing ROMs. If this statement means anything at all, it means that programs written on the old ROM will work on the new and, unfortunately, this is not always correct.

This being so we must make it clear that, at least for the next six months or so, Molimerx will contunue to issue software for the Colour Genie which is compatible with the old ROMs. Where incompatibility exists we will have separate versions for the new ROMs but it will be the customer's responsibility to let us know that he has them. In other words, unless it is so stated in an order, old ROM software will be shipped.

This may be a convenient time to mention another point. Although it would be nice to have highly technical (and therefore highly paid) personnel manning the telephone, regrettably this is not so. The ladies who take the orders at Molimerx are trained to do just that, they are not trained to have technical knowledge of the programs. Our internal order forms are already quite complex. They remind the person taking the order to ask what DOS is owned, what machine is owned, what density of drive, whether it is single sided or double sided and so on—almost ad infinitum. It is impossible for an order clerk to remember to ask everything. Hence, we must repeat again what has been said many times in this catalogue over the years, it is for the customer to not only mention that he or she has any particular configuration, but also if it is unusual—to emphasize it. If you are giving an order to a girl and she is busily writing down the programs (hopefully in the plural) that you have ordered and you happened to mention that you have a triple sided drive, she may well not catch the significance. So please, in order to help us and to help yourself, if you have anything unusual please emphasize it so it gets down on the order taking form and, in the context of the present discussion, make certain that you mention that you have the new Colour Genie ROMs, if in fact you do.

The new ROMs give the Genie a screen of 40 by 25 and the graphic screen is now 160 by 102; in other words, four times the text screen. The F keys have been changed slightly. The PAINT command has been greatly improved to cope with difficult shapes. We always used to have trouble in using this command on the old ROMs, it is now far easier so we assume that some bugs have been cleared up. The PLAY command has been extended and the PLOT command has been considerably speeded up. There are various other, what one might call, convenience changes. Thus, the hexadecimal and octal statements permit spaces to follow the number within statements and leading zeroes are not mandatory. VERIFY can be used with the program name and KEYPAD may be used with variable. Of rather more importance is the abolition of the FILL command, as a command. It has been replaced by a numeral from 1 to 4 following the FCLS statement. The SWAP command, which is available in a lot of interpreters, is now included in the Colour Genie. Eaca make the point that a direct swap is made and, hence, a temporary hold variable is not necessary. Garbage collection is therefore favourably affected. A rather nice addition is a bit check command. The command is CHECK and returns -1 as true or set and 0 as false or reset in respect of any bit at any address.

The above are the prime advantages of the new ROMs. They are available from Lowe Electronics to end users at an inclusive price of £10 for a set of four. It is important to note, however, that this is on an exchange basis, that is to say, the old ROMs must be sent back to Lowe's with the £10 and the new ROMs will then be sent. Even the most timid hardware hacker need not worry about the installation of these ROMs, they are all marked and it is literally a matter of just taking one integrated circuit out and replacing it with a new one. They are of course moderately delicate and susceptible to static.

JANUARY 1984 LISTING

HOSPITAL HOMICIDE — A NEW APPROACH TO GAMES?

When you sit here day after day and month after month assessing new programs and trying to make decisions as to whether or not to publish, it is very refreshing when an entirely new type of program comes along. Hospital Homicide is such a piece of software. The idea behind the game is that there is some maniacal type of hospital around which habitually gives rise to murders. We are not sure as to why a hospital is chosen by the author as a venue, but perhaps he had some unfortunate experience at some time. At any rate the atmosphere of the program is that the player is in charge of, or has access to, a Police computer. By means of interrogating the computer and gaining information from it he should, if he is sufficiently bright, be able to solve the latest homicide. It is, perhaps, a comment on the staff at Molimerx that nobody has yet done it! The program starts with a letter from the hospital administrator which reports to you the murders that have taken place, that the Police have set up a mobile incident room in the hospital grounds and are convinced that the murderer is a member of the hospital staff. The Police have linked their computer to that of the hospital in order to better collate the records and data. You, that is to say, the player, have been granted access to this network via your micrcomputer. The murderer is a regular sort of criminal in that he murders once every midnight. Obviously if the player does not achieve some skill fairly quickly the population is likely to be depleted rather rapidly. In certain circumstances, the details of which we will leave you to find out, a message will be received via your computer network telling you that a microcomputer user has been found murdered and slumped over his machine. The information is of little use to you, because the person concerned is yourself. The game is over and the murderer is revealed to you. The time starts in the game at 1 p.m. If you want to avoid another murder you will have to solve the mystery by midnight. If you do not, then another murder takes place and a plan of the hospital wing is shown displaying everyone's location at the time of the crime. Statements are, of course, available from each suspect. In summary, it is a neat idea and good fun to play. The idea of investigating a crime in a microcomputer game is not new, but the idea of doing so through a hook-up to a mythical network is. You will have fun with this one.

INFOSCAN — A NEW TYPE OF DATABASE

Infoscan is a hard one to describe, so you may have to bear with us somewhat. It is a database in that information is accepted into the program and stored with the ability that such information can be recalled at a later date. On the other hand, Infoscan, to some extent, includes features of a word processor package. Perhaps the easiest way of describing it is to state what it is not. In an ordinary database management program, the user is confined to the format and layout of the program. Taking a normal example of a mailing list database, for instance, although the format of the label may be capable of change, the actual format of the entry and display of the data is quite rigid. For instance, it is normal for the user to be restricted as to the number of characters per name or address item. The same remarks apply to databases other than mailing lists. In other words, one normally has to abide by the rules of the program, so far as the entry and display of data are concerned. Infoscan is not restricted in this way. It is a generalised facility and provides the means for the user to store, recall and display information in almost any format that he desires. Most importantly, it is used to organise, store and recall information in any format which is meaningful to the user. If one record, for instance, is simply a name and address but the next one is a name and then a comparatively long note on something relevant to that name, then that is fine. One is not restricted to the normal rigid format. Actually, the title of the program is quite descriptive. Infoscan is an information reference program whereby information is input by the user and then later scanned at his leisure. We have to call each set of data a "record" simply because there is really no other word for it. Nonetheless, one should not confuse the usage of that word with the more normal usage in a normal type of database. Each record is supplied by the user with a key word and is later recalled by reference to that key word. Incidentally, before we forget to mention it, Infoscan requires 48K of memory and although it will operate on a single disk drive system, two drives make things a lot easier.

The power of Infoscan is that it has been designed to be extremely simple in use. For instance, the main screen is arranged on a window basis. Apart from the logo window there are three others. The largest is called the Small Screen Text Window and, as its name indicates, it is used for reviewing small sections of text. When larger amounts are required the whole screen is switched in, in the normal way. The top right hand corner window is a Status Window. This displays information about the file that you are processing including its name, key word and sort group. The Main Menu Window allows the user to select the Infoscan function required. There are six of these entitled File, Scan, Add, Delete, Change and End. The first one allows one to choose the file required, the second to scan the file, the third to add to it, and the fourth and fifth are used to delete and change the contents of the file.

The big advantage of Infoscan that must be continually emphasised is that the user is at all times in command of the format and content of the record. If it is more meaningful to the user to have a telephone number in an address file in a certain position then he can do that. If his data requirements are such that certain words or titles have to be in certain places then this is fine. In a word, Infoscan is true freeform and is also truly general purpose. It is, in fact, the exact opposite of a dedicated database. As a matter of fact, the word "freeform" is meaningful in its literal sense because with Infoscan you can literally create your own forms in the program and then use those forms later for the entry of information when necessary. Remember that your data is stored in the information record in exactly the same format as was used at entry time. Another feature of Infoscan which one must bear in mind is that it has been written with the more inexperienced users in mind. It is extremely user friendly and, for that matter, user forgiving. As a matter of fact, about the only way that we have found to make it crash is to hit the Reset button! So far as capacity is concerned, up to 350 information records can be created and stored in each information file that you make. Any number of files can be created. The practical limit for file size depends on the capacity of your disk drive and, of course, on the average length of the information records in the file. Each record in your file will take a minimum of one disk sector and a maximum of seven disk sectors. Each disk sector, of course, consists of 256 bytes and hence the maximum record size is around 1700 bytes. The actual figure would be 1792, but a small amount of overhead should be allowed. All of these figures are to some extent interrelated. For instance, it would not be possible to get 350 maximum size information records on one disk. The important point to remember is that the practical restriction is the size of your disk capacity. The method of entry in Infoscan is, as we mentioned above, somewhat similar to a word processor and perhaps the best way that we can continue this description is to briefly go through a sample session with Infoscan.

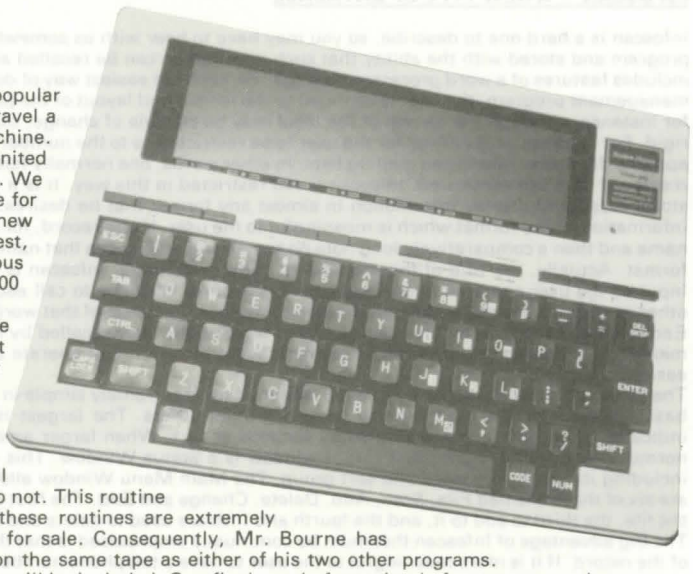
When the program is first booted, one is presented with the normal window screen which we described above. As we are just starting up, the Status Window will show us that we have no file active and hence the list of functions, the menu, will flash next to the file option thus indicating that we must do something about it before we go any further. There is, in fact, a demonstration file supplied on Infoscan, so if you wanted to have a look at that, we would simply enter the Entry key whilst the file option is flashing. The Small Screen Text Window would then change and prompt us to enter the file name. If we type in DEMO then the text screen would indicate that the file was being loaded, and after this process is completed the function, or menu, window would move the flashing cursor down to Scan. We would press the Enter key and thereby be able to investigate the contents of the demonstration program. Processing errors are reported as they occur. They will only occur as the result of disk reading or writing operations. Infoscan itself does not permit any other type of error. In other words, if there is to be an error it will be the result of the disk operating system bad read or write. Hence, such errors are reported by reference to the error message or error code listed in your disk operating system manual. As we have indicated there are five important menu selections. The first, File, which enables you to specify the file which you wish to access. If the file does not already exist on any disk presently mounted in the system, then it is created as a new file. In fact when you create a file, two separate disk files are made. The first contains a list of the key words and the second is a main data file. Linking is obviously included, hence the system used is a modification of ISAM.

The second menu option is to scan. The key words of the file are loaded into memory and a rather nice way of selecting the record is used. The list of key words is moved up past a set of scan brackets by means of the arrow keys. When the record that you require is level with the centre line then the Clear key is pressed and the relevant information record is retrieved from the data file and displayed on a full screen display. The name of the file plus the key and sort group are displayed on the top line, and this line does not scroll. The remainder of your particular record, however, may be moved about the screen at will. The contents of the record are entered using one of two formats, either small screen or full screen. Depending upon which has been defined, so it will be displayed.

The third choice on the menu is to add a record. This is used not only to add records to an existing file, but also to add records to a virgin file. The first thing to be defined is the key word for the entry, and this can be up to 17 characters in length. Either letters or numbers

may be used. A sort group may also be specified for each new information record. The sort group is a means of controlling the manner in which the key word list is sorted. Obviously, as you add new records to the file so the key word list or index expands. After each session with Add, the list is re-sorted to speed up future access. This procedure causes key words containing alphabetic characters to sort in alphabetic order and ascending numeric sequence. At times this system may not be appropriate, in which case one makes use of the sort group feature. When using the add option it will, of course, be necessary to enter text and it is now that the real power of Infoscan becomes apparent. As we have said, essentially you are using a word processor. You are presented with an empty screen and a blinking non-destructive cursor, controlled by the arrow keys. Thus, information can be added to existing lines, errors can be corrected, and so on. Scrolling is automatic and word wrap-around is supported. Infoscan is unique — as far as we know — in providing a form generation and form fill-in facility with a feature called Formflash. Often the information records that you wish to create are actually forms of one kind or another. It would obviously be very time consuming to have to retype a standard form for every new information record that you wish to enter. With Formflash the standard form is entered once and stored as part of the information file. When later used, the form is taken from disk and superimposed over the text entry area. You then use the floating cursor to go from item to item. A number of other word processor-like features are available in the Add function including the ability to print the record, insert and delete lines and clear the entire text area.
The last two options in the menu can be dealt with fairly quickly as they are essentially self-explanatory. The first is to delete. In that the system used is a type of ISAM, it is the key word that is deleted. Consequently, when you call this function the list of key words is presented. The list is scrolled until the appropriate index word is adjacent to the brackets, in the same manner as when the scan function is used. Pressing the Shift and the Clear keys together will cause both the key word and its associated information record to be deleted. The Change function is used as one would expect. The appropriate record is chosen and then displayed. The word processing features of Add are available and the record is changed, and then refiled.
In summary, Infoscan is an extremely useful data base tool. The chief feature of which is its ability to store information in any format meaningful to the user, rather than in a format decreed by the program itself. There are two or three data bases available now similar to Infoscan. We have used them but find Infoscan to be by far the easiest and "friendliest". It is compatible with major disk operating systems. The manual states that it has been tested with TRSDOS, LDOS and Newdos 80 which presumably would make it also compatible with Dosplus and Multidos. A reminder that 48K of memory is needed.

MODEL 100



The Model 100 from Tandy is proving an immensely popular machine, particularly in the United States, where people travel a lot more and where a modem is included in the machine. Nonetheless, we understand from Tandy that in the United Kingdom and on the Continent it is tending to break records. We are, therefore, doing everything we can to produce software for it, and the first offerings are listed below. We hope that new programs will be added with every list. As a matter of interest, we have just heard that InfoWorld, the highly prestigious weekly microcomputer magazine, has awarded the Model 100 its much sought-after Product of the Year award.
CZAP and CSTAR were written by T. J. Bourne who wrote Pascal. For his own use he has written two other short programs, one of which enables a more informative directory to be displayed from Basic. It displays the current length of each RAM file and includes the Paste buffer. The other program gets over the annoying problem of the automatic printer line feed versus the non-automatic printer line feed. The Model 100 assumes that any printer will automatically perform a line feed, whereas many printers do not. This routine inserts a line feed after each carriage return. Although these routines are extremely useful, in practice they are not really commercially viable for sale. Consequently, Mr. Bourne has kindly given us permission to include both free of charge on the same tape as either of his two other programs.
In other words, if you buy CSTAR or CZAP the two routines will be included. One final word of warning before we get to the programs. There are considerable difficulties initially between the U.K. and U.S. Model 100's. If you have an American version of the machine you must contact us before any purchase, to make certain that the program will be compatible with your machine. As with all new machines, first programs tend to be short and simple. Consequently some of the less important following programs have been grouped together in compendiums.

CZAP — A MONITOR FOR THE MODEL 100

One of the first things that the serious user wants to do with a new machine is to get into the memory and have a look at it; where necessary alter it and finally, if he is interested in machine language, he will probably want to disassemble. These functions are precisely what CZAP will do. There are, in fact, seven different functions available. These appear at the bottom of the screen in the same way as the prompts for the function keys normally do and they are, in fact, selected by pressing the appropriate function key.
The default address of the first byte in memory to be investigated is zero. If the user wishes to start there then that is fine; he need do nothing more. If, however, he wishes to start examining or disassembling at a later address, then this must be entered by selecting the address change key F7. The address may be in either decimal or hexadecimal. Once the new address is selected, then the remaining functions will start there. The display of memory to the screen is in fairly standard format. The address in hexadecimal is listed on the left followed by 8 bytes in hexadecimal towards the centre of the screen, and then on the right hand side the same bytes are represented in ASCII. If the byte is incapable of being represented in ASCII then a full stop is shown. The entire screen is used, so eight lines of information are listed. In view of the size of this little machine, this is really quite amazing. Examination is dealt with in pages of 1K bytes. In other words, after the 1K has been displayed, a new address is selected. Whilst in this mode the previous 64 bytes can be displayed on the screen by pressing the second function key. Thus one has control over the display at all times. Either RAM or ROM may be displayed.
The program gets its name from the fact that it can modify or Zap memory. It does this on a display similar to the memory dump. That is to say, of 64 bytes, arranged as memory address, 8 hexadecimal bytes and then the ASCII representation. When the modify option is chosen, however, a cursor will appear and this may be moved at will with the arrow keys. The new data can then be typed in in the usual way and the memory modified. It is, of course, of particular importance with the Model 100 that one takes the greatest of care. CZAP enables one to modify in RAM and it is certainly not beyond the bounds of possibility that critical areas can be changed, which would not only cause the necessity for a complete re-boot but could also damage data.
The disassembly is, like the other commands, chosen by pressing one of the function keys. It is a single pass disassembler. Wherever the memory contents can be displayed in ASCII, they are. The display scrolls. In fact, the slower display rate of a liquid crystal display fits rather nicely with the speed that one wants from a disassembler display. It will carry on continuously at a sedate pace until either the Pause key is hit to stop it in a particular place, or any function key is pressed so that a new address can be entered. The disassembly is in 8085 instruction format but for compatibility with other TRS-80 models, which of course use the Z80 chip, the Zilog mneumonics for the instructions are used. The remaining two functions are to enable the user to send the memory display or the disassembly to the printer instead of to the screen.

CSTAR – A TEXT FORMATTER

As Model 100 users will know the machine comes with a rudimentary text editor included. This is a useful piece of software, particularly for composing letters whilst one is on the move. However, it has one big drawback in that it does not include any text formatting features. One can move text around, delete and add, but not get a particularly pretty looking output. Here at Molimerx, until this program came along, it was our habit to down-load from the Model 100 to a word processor in order to get a decent print-out. CSTAR cuts out this rather grotty chore. To some extent, as the name implies, CSTAR endeavours to offer similar facilities to the MicroPro WordStar, although of course it does not pretend to approach the features of that word processor.
The facilities offered fall into two main categories, the Dot command and Embedded command sequences. The former, as the title implies, is preceded by a full stop and represents commands from CSTAR to the printer and is mainly concerned with setting the page length, margins and so on. The Embedded commands on the other hand are more concerned with actual printer functions such as back space, tab, etc., and have been written with the Epson MX 80 Model III in mind. A complete list of the commands is as follows, the Dot commands are on the left and the Embedded commands on the right:

Start a new page
Offset all print to the right
Set the left margin
Set the right margin
Set the top margin
Set the bottom margin
Set the page length
Set the margin between header and text
Set the margin between text and footer
Print page numbers
Print text as a page heading
Print text as a page footing
Start a new page if there are less than 1 lines left on the page
Set the page number
Omit page numbers
Ignore stipulated comments

Turn alternate pitch on
Bold print
Pause print for operator intervention
Double strike
User-defined sequence
Phantom Space (space)
Phantom rubout (delete)
Backspace
Tab
Line feed
Form feed
Carriage return
Turn off alternate character pitch
Non-break space
Pass through
User-defined sequence
Underline on/off
Superscript on/off
Subscript on/off
User-defined sequence 2

CSTAR was written for use with the Epson MX-80 Mk. III printer. Thus, where an Embedded command calls for bold print this will function on the MX80, but may not on other printers. Accordingly, the author has included some instructions for program modification in an attempt to cover the more exotic features of as many printers as possible.
In summary, CSTAR is a useful utility which enables the Model 100 to feature a moderate amount of word processing power.

COMPENDIUM NO. 1 – CALENDAR AND ALARM

These two programs are naturals for a portable machine such as the Model 100. The calendar is particularly useful. When the program is selected from the machine's main menu a calendar page is displayed on the screen representing the current month, chosen by reference to the date setting of the machine. Thus, if the date is the 10th January 1984 and the menu cursor is positioned over the program name, then pressing the enter key will result in the calendar month of January 1984 being displayed. The display lends itself ideally to a calendar, and it can be read from some distance. Up in the left hand corner is a prompt for another month. When that is chosen one is asked to input the year and the month, and the calendar for the chosen period will be displayed. A simple program, but very efficient, and for a machine that you carry around, very useful.
The alarm program is another useful program. When it is chosen from the menu, the current time is displayed and the user is prompted to enter the alarm time in 24 hour clock format. The display then changes to one line with a border top and bottom. At the left hand end is displayed the current time with the seconds ticking away. This is followed by the date and day, and the right hand section is taken up by a display of the alarm time previously set. This is how the display stays until time catches up with the alarm, and when this happens the internal beeper goes until such time as any key is pressed. One obvious drawback to the program is that the machine will be on whilst the alarm program is running, with the subsequent penalty of battery drain. If the machine is plugged into the mains, of course, there is no difficulty.

COMPENDIUM NO. 2 – PIE AND RENUMBER

The first of these two programs is a straightforward Pie Chart drawing program. When the program is called one is asked how many sections and the value for each. The appropriate replies will cause the program to draw a pie chart in the normal way. An added feature is that the percentages of the sections are also shown. Obviously, this program does not have all the bells and whistles that other graph drawing programs have. It is straightforward, but the contrary side of this coin is that it is simple to use. We visualise it being used on aircraft or other places where one person is trying to explain something to another, and if that explanation can be reduced to a chart then this program may well be of assistance.
The renumber program will renumber any Basic program, or for that matter any other numbered text, because the type of file which will be renumbered is a .DO. Basic programs are, therefore, simply saved out as a .DO file prior to renumbering. This facility means that appropriate programs constructed under TEXT can also be renumbered, which is a useful feature. Branches are, of course, also renumbered. It is hard, nowadays, to think of programming in Basic without a renumbering function available. So this utility will be of particular use. Its only drawback is that compared to renumbering utilities on bigger machines it is slow.

BLACKJACK – TO WHILE AWAY THOSE DULL HOURS!

This tape is supplied on its own, not because it is a particularly important program but because we do not have another game at this moment to go with it! It is a straightforward game of blackjack. As far as we can see it is played according to American blackjack rules and between 1 and 4 players may take part. It should be of use on a plane or in similar circumstances, to while away some very boring time. It is written in Basic and does not include any gimmicky protection devices. Hence, if one gets bored with playing it, the time can be used to go into the program and change the odds! Blackjack is priced at just over half of the compendiums, as you will see from the index. It may at a later date be included with another game.

ZGRAPH – GRAPHICS EDITOR, FOR MODEL 4 TOO

This program is similar in functions at least, to the PowerDraw program already stocked. Frankly, if it had not come from Misosys and been available for the Model 4 as well as for the Models I and III, we would have hesitated long and hard before stocking it. As is everything that comes from Roy Soltoff, however, it is an excellent program and deserves to be made available in the U.K. The title is, perhaps, a little misleading. The "graph" is an abbreviation for "graphics"; it does not refer to bar graphs or curves. ZGRAPH is a powerful complete graphics editor package that gives you all the tools you could possibly want to construct screen images using your computer's block graphics capabilities. Once constructed, these screenfulls of images may be saved to disk and converted into forms subsequently usable by Basic or machine language programs. In addition to the ZGRAPH editor the package includes five utility programs which you can use to create, display and manage ZGRAPH screens. We suppose that any program written by man can be improved by man, but offhand we cannot think of any feature not included in ZGRAPH applicable to creating screen designs, nor do we know of any such program which is easier to use. For instance, once a design has been created then it can be moved en bloc, displayed in reverse graphics and there are two other particularly nice features called X-Flip and Y-Flip. These will flip a design over in either the

X or Y axis. Rectangles, squares, circles and so on can be drawn automatically, simply by defining the start and end point. An added feature of ZGRAPH is that the program will optionally report the present position of the cursor and the marker in column and row format. Text may be added to the graphic screen, of course. Screens are stored in buffers in much the same way as PowerDraw. Once there they can be retrieved at will in addition to, or in place of, retrieving a design from a disk file. The command which will automatically draw a circle, incidentally, will also automatically draw an arc. This we have found to be a particularly useful function. As we have said, the final design may be saved in a number of different ways for later use in other programs. It may go to storage in a form usable by Basic in two different ways. Firstly as a packed graphic string and secondly as straightforward data statements. One particularly nice feature is that the design may be stored to disk in the form of a /CMD file which, of course, is executable merely by typing the name given to the file. The screen data may also be stored to disk in source file format for later loading into EDAS. This editor assembler is, of course, written by Roy Soltoff and hence this is the one that he plugs. We do not know whether a file from ZGRAPH would be compatible with other editor assemblers, although assuming a degree of sophistication in them we can see no reason why not. Files may be sent to a printer. There are two utilities for this. The first supports the DMP Tandy printers, and the second the Epson. A further utility enables the consecutive display of all buffers saved in a file. A delay may be inserted between each display, so presumably it would be possible to create some animation, although it would of necessity be short in sequence. A further utility saves the screen to a file for later manipulation.

LOGICAL SYSTEMS INC.

As those customers who follow our magazine advertisements will know, quite a lot has been happening between LSI and Molimerx recently. The most important is that we have now been licensed to manufacture all LSI 5.1.× products, together with some 6.× products in the U.K. This means that henceforth we shall be able to sell at the sterling equivalent of the U.S. dollar retail price. In other words, buying from Molimerx in the U.K. will be exactly the same as an American customer buying from LSI in the States. Some products have benefitted from a considerable price decrease, some have stayed the same, but you will be glad to hear, none have increased, over our previous selling price.

Another by-product of this new arrangement is that we will be producing **all** of the LSI 5.1.× software. We stocked 90% of it previously, but a few programs have had to be added and they are listed below. We should emphasize that, in some cases despite the reduction in price of software, the quality of the documentation remains exactly the same. In the case of LDOS, for instance, the same documentation is simply re-printed in the U.K. and binders are almost identical. The only difference being a credit to Molimerx.

Another new happening on the LSI front concerns their publication which, it will be recalled, used to be called the LDOS Newsletter and then was re-named the LSI Journal. This magazine started off, as its name implies, purely as a support medium for LDOS. By popular demand, as the saying goes, it expanded into a magazine and then into a glossy cover magazine. As might have been expected, the latter caused a great deal of difficulty for Logical. There is probably not a more highly expert systems programming company in the world, but they have little or no expertise in producing magazines. Eventually, they had to choose between their software and the magazine and, of course, opted for the former, so the Journal is now being phased out. No subscriptions have been accepted by Molimerx or LSI for some month or two. Contrary to what some customers have thought, this does **not** mean that **any** support is being withdrawn from LDOS. What it does mean is that this support is going back to what it probably should have stayed at originally, namely support on a personal level when dealing with customer enquiries as and when they arise. This support will now come entirely from Molimerx who in turn, of course, will be supported by LSI should the need arise.

The new pricing is reflected in the current index. The additional programs (including a couple of new ones) are as follows:

DISKDISK – FILE = DRIVE!

The best way to describe this one is to call it a cute trick. It will be recalled that LSI produce a program called Memdisk, which takes a portion of RAM and to all intents and purposes converts it into a disk drive. DiskDisk goes a stage further. It does not use a section of RAM as the quasi drive, but a disk file on a physical drive. This is useful for a number of reasons. Firstly, it essentially overcomes the limitation of 256 files per disk on a hard drive. For the floppy user it is very useful for creating memory image back-ups from a drive with a larger storage capacity to a drive with lesser storage. The program comes in two separate modules both, of course, included in the package. The first is a formatter program which initially creates a DiskDisk, and the second is a program which either sets up an existing DiskDisk file as a drive or disables an active DiskDisk. The quasi-disk may be given a cylinder count between 3 and 96. It may be formatted in single or double density and have one or two "sides". There are four different types of DiskDisk which may be created. The differences are mostly concerned with the type of storage used. For instance, defining the DiskDisk as 5 or 8 will create a quasi-disk of 5 or 8 "inches". The smallest storage blocks which may be defined are 1 sector per granule and 8 granules per cylinder. The maximum size of such a DiskDisk is 192K. The other type which uses larger blocks will result in a DiskDisk twice the size of the previously described type. As we said at the beginning, a cute one!

QUIZ MASTER – MOSTLY EDUCATIONAL

Quiz Master is an educational/informational question and answer program which can also be used as a game. Its basic operation is to display a question and four possible answers. It scores the operator's response based upon both his speed and accuracy. There are three possible skill levels provided. The order of answers is randomised to prevent answers being memorised. In other words, the question sequence is never the same. Quiz Master comes with three subject files of U.S. information, general trivia, and fantasy and science-fiction trivia. These files can be increased or edited, but as particularly the first one is orientated towards the U.S., it is useful that a feature is included so that the user may create his own speciality files and that the existing files can be increased or edited. Each file can hold up to 255 question/answer sets. Obviously, as many files may be created as is desired. In addition, there are 2 separate modules available, both of which require ownership of the original Quiz Master. The first specialises in questions on geography and the second on mathematics.

To a large extent this program is similar to our Multiple Choice program. Quiz Master is, perhaps, a little more dedicated to the subjects mentioned. Multiple Choice is entirely general-purpose.

UTILITY DISK NUMBER 1 – LDOS UTILITIES

Funnily enough Powersoft brought out their LDOS utility packages before LSI and although there is not a great deal of duplication, we felt that one lot of utility packages was enough and up until now, therefore, have only stocked Powersoft's. The LSI utilities together with a brief description of each, are as follows:

COMP: Compares two files, parts of files, diskettes or parts of diskettes for character by character match.

DCT: Displays the Drive Code Table for any one of the eight possible logical drive numbers. All information is displayed and may be modified.

DIRCHECK: Checks a disk directory for flaws and attempts to fix any detected. There are over a dozen errors which can be reported, and if a total recovery from any errors is possible, it will be so reported.

FIXGAT: Attempts to repair an unusable Granule Allocation Table.

HIGH: Displays the allocation of high memory. In other words, it goes a step further than the LDOS Memory command.

MAKE: In some ways similar to the CREATE utility in LDOS. The latter reserves room for a file. MAKE will optionally write a character to all of that reserved space.

MAP: Lists the allocation of existing and some deleted files by extent, cylinder, sector and granules reserved for its use.

RAMTEST: Tests all user memory from 4000H to the end of RAM.

RDTEST: Reads an entire disk to assure that all data is readable.

READ II: Allows the transfer of files from a Model II diskette to LDOS. The files must have been written under TRSDOS 2.0a.

READ 40: Permits the reading of a 35 or 40 track disk in an 80 track drive. Note that we have always had grave doubts about the usage of this type of utility.

TYPEIN: This is a useful one (which unfortunately is not always able to work), but it attempts to allow character input to the keyboard in any program which does not continuously scan the keyboard for specific characters. Note that in particular it will not work with any program which constantly calls the keyboard driver looking for the Break or some other abort.
UNKILL: Restores a file previously deleted by the KILL or PURGE commands. Restores the directory if data had been overwritten and, of course, the file will have been lost anyway.
WRTEST: Tests a disk for writing. Essentially a quality test on a disk.

FILTER DISK NUMBER 2 – AN ADDITION TO NUMBER 1

On page 79 of the Catalogue is described the Filter Package for LDOS containing 13 useful filters. Another disk of filters has been issued by LSI, not illogically called Number two. It does not contain as many utilities. In fact it has nine, but they are perhaps more important than the original, and two of them are not filters at all but a straight utility in one case and DCT in the other. The package is as follows:

COMM1/FLT: The first filter is for communication purposes. It is compatible with the RS-232 drivers and it provides testing for a modem carrier, delay between characters, plus line feeds and nulls after carriage returns.
DICTATE/FLT: A keyboard filter which allows the switching of the attached cassette recorder motor on and off. The purpose is to turn your TRS-80 into a dictation machine.
DOSPEED/FLT: A filter to regulate the speed of an output device. DOSPEED controls the rate of output to a device which may be any legitimate DOS device which has had an output direction.
KSMPLUS/FLT: This works essentially the same as KSM provided with a standard LDOS system, but is capable of extended features such as the editing of a resident KSM table, recall of date and time, and recall of the last LDOS command.
LCOUNT/FLT: Usually used with a printer. This filter will provide a line number preceding every line of text. The line number is five digit, right justified and padded with leading zeros. One primary use is to insert line numbers in source code.
MARGIN/FLT: Sets the width of the left margin for the printer.
MAXLATE/FLT: This is a particularly useful filter which will translate a user defined key into a group of characters up to 256 in length. This provides an effective means of "foreign" translation between a computer and many peripherals. There are many uses for this filter. One of its chief applications is in converting printer codes.
SLOSTEP/DCT: This is a high memory disk driver required for certain disk drives. LSI recommend it in any case where a user is having difficulty in formatting disks, particularly where the cylinder lockout occurs from a certain point to the end of the disk, or in certain consecutive blocks on the disk.
VIDSAV/CMD: This program filters the video and keyboard to reside a screen in memory which can be subsequently saved to, restored from, or swapped with, the current video display.

ULTRA-TREK – SON OF STAR TREK

All of the Treks stem from the original Star Trek and it is hard to think of new things to say about them. Compared to the latter-day highly graphically orientated arcade games, the original Star Trek probably looks somewhat out of date. Ultra-Trek, as its name implies, is an improvement on the original, but nonetheless it should be understood that it is more of a strategic game than a graphic game. The grid size is 7 × 7 giving each sector 49 co-ordinates. In the usual way, you as Captain Kirk are placed in a random position in one of the sectors. There is a short range scanner and long range. In the normal way you can travel inter-sector or long range. The manual is, perhaps, better than some Star Trek manuals and is interesting in that it gives one a description of the scenario of the mission upon which you, or rather Captain Kirk, are set upon. Ultra-Trek is not very expensive and can give hours of enjoyment. In all fairness, however, it must be said that it will probably find its market amongst true Star Trek enthusiasts.

"STANDARD" EQUIPMENT

As the microcomputer market and industry gets broader and broader, so there are more and more independent producers of hardware and it has become necessary for us to make our position very clear to customers in this regard.

No software house that has a reasonable number of programs and supports its software properly can possibly do anything other than adopt the position that it only supports the manufacturer's original equipment. In other words, equipment listed in the manufacturer's catalogue. In the case of Tandy, in their current computer catalogue, and in the case of Eaca, in the current price list of Lowe Electronics. This is what is meant by "standard" equipment. This does not mean that we consider any hardware produced by independents as in any way less in quality than the original manufacturer's, what it does mean is that logistically we are simply unable to ckeck all of our programs against hardware produced by third parties.

Prime manufacturers, such as Tandy and Eaca, provide substantial software houses with a good deal of help and advice. In particular, they provide lists of documented addresses and procedures. By documented it is meant that, in the case of an address, it will not be changed throughout the life of the hardware. On the one or two occasions that such addresses have been changed, then we have been notified well in time to change software before the new hardware hits the market.

If any independent hardware producer could show us that he was fulfilling a need in the market and is prepared to adopt the same professional attitude as the manufacturers, then no doubt we could support the hardware. All too frequently nowadays, however, new companies come on the scene, undercut the manufacturer on one or two items of that manufacturer's range and convince a purchaser that, as the price is lower, he, the purchaser, should buy the product. We do not decry either the vendor or the purchaser, after all we work in a free marketplace, but purchasers should be aware that, unless a manufacturer has approached us with his product it is impossible for us to say whether any of our programs will operate on his hardware or not.

CP/M 2.2 FOR THE TANDY MODEL 4

The CP/M disk operating system has achieved a large degree of standardisation. This should not be confused with transportability. Our feeling about CP/M is that it has achieved its position in the industry more by default than by its features. We have yet to meet a TRSDOS, let alone LDOS or Dosplus, user who did not feel that he was downgrading when compelled to use CP/M for one reason or another. Nonetheless, like it or not, CP/M has achieved standardisation and it has been available for the Tandy Model II for some couple or years or so. Tandy have now decided to make it available for the Model 4, but as yet have been unable to come to market with the actual product. To bridge the gap between the time in which the Model 4 was issued and the availability of the Tandy CP/M, Montezuma Micro have produced this version of CP/M 2.2 compatible with the Model 4. Until Tandy have released their version, nobody will know how the Montezuma compares. One suspects that it may be better, for it has a large number of added utilities compared with the standard CP/M and, wonder upon wonders for CP/M, some user-friendly features!

The intent of the added utilities is to a large extent to make CP/M more user friendly. As operators of the straight version will know, it could certainly do with it! The utilities, which are very nicely displayed automatically on the screen when you fire up are as follows:

ASM.COM	CONFIG.COM	DDT.COM	DUMP.ASM
DUMP.COM	ED.COM	FORMAT.COM	INTERCHG.COM
LOAD.COM	MEMLINK.COM	MODEM.COM	MODEM.DOC
MODEM7T4.ASM	PIP.COM	REPORT.BUG	STAT.COM
SUBMIT.COM	SYSGEN.COM	XSUB.COM	

If you have any experience with CP/M some of these files will be familiar whilst others will not. For instance, obviously you will know PIP, SYSGEN and STAT.

Unfortunately, it is beyond the scope of these notes to describe each utility in detail but we will see if we can go through a few of them. Obviously the first thing you wish to do is to make a backup. This, unlike the original CP/M, can be done very easily. One merely calls the FORMAT file and you will find that Backup is one of the options included in the menu. The procedure is to format and then backup.

All the disk parameters come up automatically on the screen. In other words, you are told the configuration of the disk that you are backing up and in the formatting part of the utility you are given the option of changing either, sides, number of sectors, density and so on before formatting. In other words, you have a very nice and versatile Format and Backup utility. There is, incidentally, no restriction on backups.
We need not spend very much time on CONFIG as this is normally in CP/M 2.2. It is used to modify the CP/M software interfaces to fit your own hardware. In this way you can customise your disk drive configuration and set the RS232 serial port. This is, of course, extremely important when you wish to read CP/M disks which were written on another machine, as you can configure to pretty well any disk format that you want. Most importantly, you can configure in single or double density and for that matter for single or double sided. The RS232 parameters capable of being changed are normal, that is to say, baud rate, parity or length and stop bits.
SYSGEN, as we have said, is more or less the standard file.
CP/M requires some keys which the Model 4 does not have. Provision is made in CP/M 2.2 to re-configure to those keys.
Probably one of the most important files on this version of CP/M is INTERCHG. This is the mneumonic for the word "Interchange", and as that word implies it enables this version of CP/M to interface with a large number of others. The full list is as follows:

Montezuma Micro (DD,SS)
IBM PC CP/M-86 (DD,SS)
Xerox 820-2 (DD,SS)
Osborne Executive (DD,SS)
Zenith H89 (SD,SS)
NEC PC-8001A (DD,SS)
Cromemco Z-2 (DD,SS)
Lobo MAX-80 (DD,SS)
MM ShuffleBoard (DD,SS)
Omikron Mapper 1 (SD,SS)
Access Matrix (DD,SS)
Hurricane Compactor I & II (DD,SS)
Xerox 820-1 (SD,SS)
Osborne-1 (SD,SS)
Kaypro 2 (DD,SS)
Zenith Z100 (DD,SS)
Cromemco Z-2 (SD,SS)
Eagle 80 trk. (DD,SS)
LNW Computers LNW80 (DD,SS)
Holmes VID-80 (DD,SS)
Morrow Micro Decision (DD,SS)
Radio Shack Model 4 CP/M Plus (DD,SS)

One of the great myths of CP/M is that, as the industry standard, it can move software around at will. In fact, the normal CP/M often does not do this. This INTERCHG file, however, will get you about as close as you can achieve. Note however, that it permits transportability, not necessarily compatibility.
MEMLINK is very similar to MEMDISK, which is a utility published by LSI and sold by Molimerx. You will find it described in the catalogue. Essentially it sets up a RAM resident pseudo disk drive.
The MODEM files enable CP/M to be used in communications mode. Your Model 4 must of course have an RS232 in it.
ASM is, of course, an assembler. Again we have not had time to go through this in detail, but the normal CP/M assembler supports Macros so we assume that this one does as well.
ED is the normal editor that one receives with CP/M.
How long the Montezuma CP/M will be stocked will depend upon the availability of the Tandy version and its quality.

INSIDE TRACK — AN ENHANCED HORSE RACE GAME

This game is our first offering of software written in Australia and submitted to Molymerx out there for publication. To a large extent it is an improvement over our existing program Race. The following is a re-print of the Australian Catalogue entry:
The Inside Track is a simulation of a Horse-Race meeting designed to provide very realistic spectator participation. The graphics are clever and amusing and the track meeting, while sufficiently true-to-life to intrigue racing fans, provides many levels of entertainment, from betting for fun, to training in analytical investment for real track use.
There are no pre-programmed or random results and the odds against a particular race meeting being re-created are quite astronomical. Each race is run in real time with the outcome subject to the same imponderables as the real thing. Horses and riders compete according to their known abilities and are affected by track conditions, distance and weight carried as well as the tactics of the other riders.
Nothing is certain in the world of horse racing. There are always unknown factors that influence the perfomance of a particular horse, and The Inside Track's major and unique attraction is that these unpredictabilities are programmed in.
HORSES:
The Inside Track has a large resident stable of named, classified horses — 750 in the disk version — each with clearly defined performance characteristics. These pointers allow you to assess the probable performance of an individual horse under the race and surface conditions prevailing at that time.
RIDERS:
The register of named riders and apprentices includes some very crafty tacticians and the ability of some of the riders will become apparent with familiarity.
HORSE PERFORMANCE POINTERS:
Indicate a particular nag's strengths. For example, the ability of a horse to accelerate in conditions where the track is soft or heavy; or the horse's starting capability or his ability to make a strong run in the later stages of the race; all are available for your assessment.
TRACK SURFACE:
It is possible for the track surface to change slightly during the race-meeting — a strong wind and warm sun might dry out a wet track and heavy rain can soak a dry one; watch the up-to-date track surface reports.
DISTANCE:
Race lengths can vary from five furlongs to one mile (a furlong is 1/8 mile). A short distance will sometimes give a fast-starting horse a significant lead with stronger-finishing horses unable to get themselves positioned in time to bridge the gap.
TOTE INDEX:
After the field has been posted on the race-board, the calculated off-course betting levels produce Starting Odds for each of the entrants which are displayed under the heading of 'Tote Index'. If, for instance, the number displayed is a '2' then the payout odds for a SHOW bet are 2-1; for a PLACE bet double that at 4-1; and the odds for a WIN bet will be times three, or 6-1.
The 'Tote Index' therefore gives a sort of order-of-favouritism for the race and can often be a guide for choosing a winner. It can also give valuable information for identifying a 'dark-horse' with the odds good for perhaps picking a certain 2nd place or 3rd ... or ...
BETTING:
The Members' Stand provides betting windows from $10 to a "million dollar" window and deposit and bet sequences are straight-forward with instructions available between races. Where the gambling laws allow, a "pool" facility is provided for users who want real betting facilities and a house percentage may be retained.
Once a bet is laid, the indicated is debited. A successful bet has the original stake returned in addition to the winnings.
BET TYPES:
A WIN bet means a payout only if the selected horse wins the race.
A PLACE bet pays out if the chosen horse comes first or second.
A SHOW bet pays out for first, second or third.
A QUINELLA bet allows you to select two horses in the same race, and if they come in first and second (any order) then you collect.
DOUBLE chance and TREBLE chance multiple bets (Double on races 6 and 8 — Treble on 5, 7 and 9) must be instituted on their first leg (race), and you will be invited to supply your choice for that leg only. If your first choice is successful then your multiple bet stays 'live' and after returning to the window on the next leg and entering your account number, you will be given the opportunity to supply your next choice.
BETTING ACCOUNTS:
16K (TAPE) version betting accounts are all initialised with $1000 (32K version by deposit). 16K version accounts retain their balances after the 9th race while the program initiates a new race meeting.
A Master Menu provides access to the account balances between races, and the display also indicates any 'live' multiple chances. In making a bet, indicating your account number causes the account balance to be displayed by the betting window. Attempts to bet a stake larger than your account balance will be refused.
Don't be worried by the size of some of the bets — the accounts will happily handle balances in the billions of dollars, but beware — big bets can mean big losses and your betting account will just as happily tell you that you're broke!!!

UPDATES

AIRBUS

A number of customers asked that a facility be added to Airbus so that the pilot can take off from different airports. Hitherto, the author intended that a trip should always be started from the same point. In fact, some rather clever customers found that if they landed at a particular airport efficiently, that it left enough runway in which to take off again, they could fool the author! At any rate it has now been made official, and when the program starts a choice of airport is supplied. There have been some other small improvements chiefly in the realms of realism, although it is difficult to think of how Airbus could have been made a more accurate simulation. We would take this opportunity of reminding customers that Airbus is compiled using the Microsoft compiler. Hence its compatibility with any particular piece of hardware will depend upon the compatibility of that hardware with the compiler, rather than with the program.

POWERDOT

We have not yet received the master of PowerDot II from Powersoft. As we understand the position at the moment there are now to be 3 different versions depending upon the printer. The first is for the Epson range — obviously with Graftrax, ProWriter, and a generic package for Radio Shack. The latter to cover the DMP-2100, Line Printer VIII and Colour Ink Jet Printer. Other versions are, we believe, being worked on at the moment. Customers interested in the specific improvements should check with us on the telephone. At this point in time we are not even sure as to whether the update will be subject to any extra charge over and above our normal nominal cost.

SUPER UTILITY PLUS

Registered owners will know that there is an update available to version 3.2 The cost of this update from V.3.0 or 3.1 is £5 + VAT + 75p shipping. From 2.2 it requires a replacement package at a cost of £25 plus VAT and £1.50 shipping.

MONITOR FOR COLOUR GENIE

It is stated in the Catalogue that Monitor 3 is available for the Colour Genie. Although the price will remain the same a new Monitor is in fact being shipped in place of the old, and has been for some couple of months. This is similar to the Monitor 3 but better in that it includes a number of debugging facilities in addition to the normal monitor ones. In particular, one can single step, set and display breakpoints and display or modify registers. It is a very nice monitor/debugging tool and as we have said there is no change in price.

Hints and Tips — January 1984

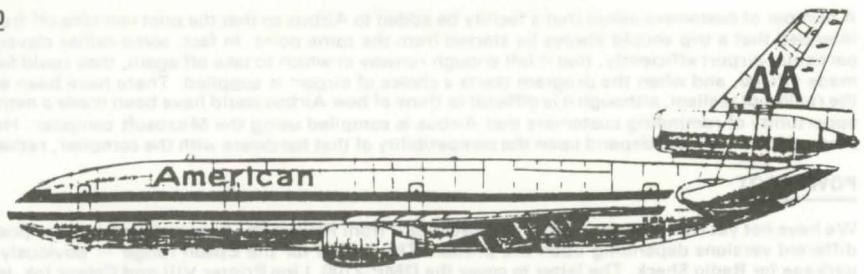
The 1983 Christmas list was distributed so early that it seems quite a while since I put pen to paper. The New Year is supposed to be a time for tidying things up, so we will devote this column to a number of different odds and ends, mostly outstanding from 1983. In the August 1983 Hints and Tips we reprinted a patch from Graham Brown of Derby which enables the Newclock-80 to work with LDOS. It seems to be a necessity that patches should need to be repatched, and true to form Mr. Brown's had a couple of small errors in it. Rather than printing the corrected list herein we have it available for anybody who likes to send in a stamped addressed envelope. Also last year we mentioned in the Hints and Tips column the availability of a print spooler from a company in Bexhill. There was quite a lot of interest in this and was the reason for one customer writing in telling us of the advantages of using another print buffer, this time from A-Line Computer Systems of 1 Church Farm Lane, Willoughby Waterleys, Leics. LE8 3UD. Obviously I do not wish this column to reduce itself to an advertising forum, but the customer was so enthusiastic that I thought it only fair to notify customers of the availability of the equipment from A-Line. In particular, they feature an intelligent printer buffer which fits inside the Epson printer and is completely self-contained. It comes in either a 32K or a 64K size. The nice thing about it is that it contains a number of print formatting features and so can form an interface between word processor packages and the more exotic features of the Epson printers. Other products are available from A-Line and I must say that I have found Mr. P. B. Sutcliffe to be most helpful. Another free hand-out this month is a list of Epson control codes to the FX-80 (not MX-80) when used with AJEDIT. Emphasised, enlarged and condensed modes are already included in AJEDIT, but this information is a very comprehensive list of additional codes. Again it is available for a stamped addressed envelope. Just in case this starts to get a bit of a habit, perhaps I should mention that Molimerx cannot accept any responsibility for the accuracy or otherwise of any of these give-aways or, for that matter, the information that we supply regarding any other companies such as A-Line above. We pass the information on simply in the spirit of assistance towards the TRS-80 community. Mr. P. Jones of Liverpool has sent in a short routine to auto-start programs on the Colour TRS-80. It is as follows:

```
ORG 271
JMP START
ORG 256
JMP START
ORG 362
SWI 3
```

This machine is beginning to get more popular, so any hints and tips regarding it I am sure would be welcomed by the customers. START is the entry address of the program. Mr. Jones tells me that address 271 is the FIRQ interrupt vector, so plugging in a cartridge will have no effect on the program. Address 256 is the SWI 3 vector, and address 362 is a vector which is accessed every time 2 bytes are read from tape. The reason SWI 3 is used at address 362, instead of a JMP instruction, is that SWI 3 is only 2 bytes long, whereas the JMP instruction is 3 and would probably JMP to the wrong address as only 2 bytes are read before 362 is accessed.
Most customers will have heard about the Tandy 2000 computer. We have a sales brochure of which we could supply a photostat if anybody needs it, again for a stamped addressed envelope — A4 size this time! Some people both sides of the Atlantic have had derogatory remarks for Tandy's progress in the microcomputer business over the last twelve months or so. There is certainly no doubt that the multiplicity of competing machines will have affected Tandy's share of the market, but it is indicative of the size of the market that I note Tandy's business increased by 24% last year. When you talk in terms of sales of two and a half billion dollars and a 7,000 shop range as Tandy does, that is quite a lot of new business. The introduction of the smash hit Model 100 plus the portable Model 4 and now the Model 2000 must surely at last have sunk the doubters without a trace. I have yet to get my anxious fingers on a Model 2000 but I am told it is a truly magnificent machine. It is, of course, 16 bit and certainly outclasses the IBM personal computer. For one thing it uses a true 16 bit MPU and not the rather ghastly quasi 8 bit that the PC uses. Hopefully the assembly programmers, no doubt with a vast sigh of relief, can go back to absolute addresses instead of juggling segments.

APRIL 1984 LISTING

DC-10 — A SIMULATION OF THE DC-10



This DC-10 program continues the line of highly accurate flying simulations stocked by Molimerx. Apart from the original Columbia Shuttle simulation, there are now programs to simulate the piloting of a 747, the Concorde, Airbus, and now the McDonnell Douglas DC-10.
The DC-10 is a three engine, wide bodied jet manufactured by McDonnell Douglas of the U.S.A. It has had rather an unfortunate history in service, in that there were problems with a cargo door and then an engine mounting which apparently was damaged in a maintenance service. Regardless of these problems, which may well have sunk the saleability of another aircraft, the DC-10 is still an extremely popular aircraft with the airlines. As will be seen from the illustration, it is quite easily confused with the Lockheed L1011 but it is, in fact, an entirely different aircraft.
As with all other major aircraft, there have been many versions of the DC-10. The first five development aircraft were actually started as long ago as January 1969. Rolls Royce got itself into troubles, and so McDonnell Douglas chose the General Electric CF6 turbo fan engine. It will be recalled that Laker Airways invested heavily in the series 10 version of the DC-10. However, taking the first series for descriptive purposes, the three engines developed 41,000 lbs. of thrust and the aircraft had a wing span of 155ft. 4ins. The maximum cruising speed was 584 miles per hour and the service ceiling was 35,000 feet. The range of 2705 miles was with a maximum payload of just over 100,000 lbs.
This program is a simulation of DC-10 flights over and around Europe. Both Gatwick and Heathrow airports are included, as are four on the Continent. As in real life navigation is by radio aids. DC-10 features no less than ten VOR beacons in the United Kingdom, and fourteen on the Continent. For the first time in our simulations Non Directional Radio beacons are included, four in the United Kingdom and seven on the Continent. Instrument Landing Systems and Distance Measuring Equipment are provided at all six of the runways upon which you can land DC-10. As with earlier simulations, wind both on the ground and aloft is included, as is a random engine out emergency. The instruments are as follows:

1. Indicated air speed gauge
2. Artificial horizon
3. Power setting for No. 1 engine
4. Power setting for No. 2 engine
5. Power setting for No. 3 engine
6. Slat setting
7. Flap setting
8. Compass
9. VOR tracking instrument
10. Instrument Landing System
11. Clock
12. All up weight
13. Fuel
14. Fuel flow
15. Runway to go (on take off)
16. Vertical speed indicator
17. MACH speed
18. Precise pitch
19. Precise roll
20. Altimeter
21. Landing gear status
22. Nose wheel status
23. Wheel brakes status
24. Air brakes status
25. True air speed
26. Wind direction and velocity
27. Ground speed
28. Destination runway, place & number
29. Distance to go
30. Precise heading
31. Precise track
32. Data from No. 1 DME/VOR
33. Data from No. 2 DME/VOR

DC-10 is supplied with a free program which enables the user to calculate Flight Plans on his computer, to be used in DC-10.
An extensive illustrated manual is supplied. It takes the reader through the control panel in general and then in detail. It discusses the controls at length; general discussions are held on flying technique of DC-10 and then simple flight manoeuvres are described, such as normal take off, noise abatement take off, take off with engine failure, climb, cruise, turning, descent, approach, final approach and landing. Procedures in overshoots and engine out emergencies in various situations are described. Simple flight briefings, in other words, instructions for suggested flights, are also included. There are a number of Appendices, including detailed discussions of the VOR/DME navigation system and the ILS approach system. Purchasers of DC-10 may also buy the educational section of the Jumbo manual for £1 if they wish.
The program is compiled Basic and is disk orientated only. The compilation enabled the author to include very precise slow down loops in the source code. Thus, as we have said, the simulation is as exact as it is possible to get. The compatibility of the program with various disk operating systems and machines will depend upon the compatibility of those DOS's and machines with the Microsoft Compiler. As far as we know, on TRSDOS it is compatible on all Genie machines (with the exception of the Model III) and of course the Tandy Model I. It is also compatible with LDOS on these machines. On the Tandy Model III the choice of DOS is somewhat more crucial as many disk operating systems running on that machine are not compatible. TRSDOS 1.3, for instance, is not. A patched version of the run time file, to enable use on the Model III under LDOS or smal-LDOS is included in the package.

TEXT-MERGE — MAIL MERGE FOR POWERMAIL PLUS

PowerMail is probably the most versatile and feature-heavy mailing list management program that has ever been written for the machines which we support. It is described fully elsewhere in the Catalogue. This program, Text-Merge, adds a further feature to PowerMail Plus by enabling the user to merge letters or other text formulated on his own word processor with the address files of PowerMail Plus. As users of PowerMail Plus will know, one of the chief features of that utility is its ability to select names and addresses dependent upon the condition of a flag (set or unset) at the time when the name and address are entered on to the file. There are some twenty four flags available, so the permutations and selectivity of the program are huge. When you add this facility to Text-Merge's capability of merging a standard letter it will be seen that a mailing list manager can pretty well send any forms of letter that he wishes, to almost any of his customers.
In addition, Text-Merge itself contains some elementary formatting ability, so you may optionally set the page size, the printed lines per page and left margin values if required. The option of adding line feeds after carriage returns is also included so that the program may suit as many printers as possible. All of the Tandy printers, of course, do not require a line feed but many others do. Printer control characters may be embedded in the form letter by the word processor being used.

BACKREST — A HARD DRIVE BACKUP AND RESTORE UTILITY

This program is only of interest to customers with hard drives. It is compatible with LDOS 5.1.x and TRSDOS 6.x. So far as we have been able to ascertain it is compatible with both the Tandy hard disks and the Cumana/Rodine unit. There is no reason why it should not be compatible with other hard drives, so long as they themselves are compatible with the DOSs mentioned.
Backing up a hard disk has always been a bugbear for users of those drives. There are many different methods of backing up available for many different machines, but in our experience the one that is still used the most is the plain old floppy disk. The usual procedure is to back files up from the hard disk to a floppy disk, but this can be quite an onerous task. First of all the number of floppy disks required has to be calculated. Then the backup or copy utility used is slow compared to the amount of hard disk real estate area that it has to cover.
Backrest is a utility which will copy or backup a hard disk, not by the normal file by file method but by creating an image on the floppy disk of the actual track contents of the hard drive. Apart from the time saving (which is about 20%) an added advantage is that Backrest does not really care what is on the tracks. Only allocated cylinders are copied, so there is no waste of time in copying inactive tracks. The second part of the program title refers to its ability to restore the hard disk contents from the floppy backups. In other words, Backrest looks after you both ways.

SUPER UTILITY PLUS – NOW FOR THE MODEL 4

First a caution. We have only just received the BETA test copies of this program. It will, however, be published long before the next list. We would expect to have stock in late April or early May. What can be said about this program? It is an absolute classic in this field. It is described very fully on pages 34 and 35 of the Catalogue. This version makes Super Utility Plus compatible with the Model 4 in Model 4 mode and, incidentally, only the Model 4 – or its portable equivalent the 4P. It will not boot in any other configuration and, of course, does not require the Model III ROM image file to be present. The high speed clock of the Model 4 is utilised so everything goes a lot faster. As there is more room in the Model 4, double sided file copy is now supported for the first time on a TRS-80, and the function keys are utilised.

MAYFLY – A UTILITY FOR MODEL AIRCRAFT BUILDERS

There is not a lot to be said about this program, but the one point that must be made is that it is a specialist program. It is only of interest to those customers concerned with model aircraft in one form or another. Mayfly is probably better described as a utility, because what it does is to make a judgement on whether or not a model aircraft will be aerodynamically correct once it has been built. In other words, whether or not it will fly. In addition, it will advise the user of what changes will be required in order to make the flight feasible so that it can do this the user has to enter a fair amount of data. For instance, upper wing span size, wing chord, fuselage width, propeller pitch and diameter, and so on. When all this has been done, the user is told whether or not the plane will fly. Additionally, a stalling speed is reported, as is power factor and other information. The report as to flight possibilty is not just a simple yes or no. There are many different messages that are reported, and then the user is asked whether or not he wishes to review or change the data. Altogether a most impressive utility for the model aircraft maker.

CGP – COLOUR GRAPHIC PLOTTER

This program is for the Tandy CGP 115, which is the neat little colour graphics plotter that has received a large amount of acceptance from Tandy users. The purpose of this utility is to dump the screen to the plotter. This is no particularly great accomplishment, except that it takes the graphics with it. In other words, if you have graphics on your screen at the time that the dump is made the print plotter will print those graphics. As a matter of fact, this is not completely true as the graphics are slightly different when they are printed, but to all intents and purposes the statement is correct. Another big advantage of the program is that the colours of the plotter can be changed during the screen dump. Hence, if you have got, say, a map on the screen you can change the printout as it goes, to a different colour. There is one obvious restriction, and that is that a colour change must be operative on a full line. It can continue to print as many lines as you wish with the chosen colour, but it cannot change colours in mid-line.

DATEMATE – A PERSONAL DIARY AND PLANNER

Before we describe this program, there are one or two requirements that it needs. Firstly, lower case is mandatory. Model I users must have two drives, and they must be forty track. Neither single drive nor thirty-five track will work. DateMate requires HIGH$ to be set in DOS. It will not, therefore, be compatible with any DOS which cannot do this, such as TRSDOS 2.3 or NEWDOS+. Indeed, it is fair to say that DateMate was developed by the author on LDOS and is probably more at home with that system. On the other hand, the author has included in the manual instructions on how to set HIGH$ under NEWDOS80. DateMate is a Basic program which has been designed with the office manager and secretary in mind. However, it can equally well be used by anyone at home or, indeed, anyone who requires to keep a diary and needs to be reminded of forthcoming appointments. Although the program is written in Basic, it uses some machine code routines. Hence, the requirement to set HIGH$. The idea behind DateMate is that the user is presented with a method of entering up to five lines of text, each line consisting of up to 48 characters. This set of data is available for each day of the year. The text may be recalled at any stage, simply by providing the appropriate date to the program. Each of the lines can have a "reminder level" attributed to it, this being an integer between 0 and 7. This flag indicates to the program the number of days advance notice that the user requires of an upcoming entry. The program maintains a very large data file on drive one. Thus, the necessity for two drives. It holds all of the text entries for the year. Information of events and/or appointments up to eleven months in advance can be stored. It should be noted that the program maintains a "roll over" diary. That is to say, days that are passed are taken off the file, thus releasing space for time in the future. The program will not, therefore, be able to advise the user of anything gone by. In other words, it cannot go backwards.

DOSPLUS SPECIAL SALE

We recently came into possession of ten copies of Dosplus version 3.4S. These are, of course, brand new in binders, complete with registration cards. They are, however, one version old. We would like to clear them. They regularly sell for £85.00 plus V.A.T. Whilst we still have them, we are selling them for £35.00 inc. V.A.T. Shipping is £1.50. First come, first served!
They may, of course, be updated in accordance with whatever is the policy of the publishers in the States.

NEWKEY – A GRAPHICS UTILITY

Customers may be forgiven for asking why another graphics program is being published by Molimerx. The state of the art in this type of software is so far advanced that programs like Powerdraw, Powerdot and Zgraph have long since overtaken the simpler programs. There is, however, another side to that particular coin in that sometimes, in our business, programs and indeed hardware, get so complex that it leaves behind those users who are just starting in the business. That is why we publish a certain number of Basic programs from time to time, and Newkey falls within this category, especially as it is only compatible with Tandy Model I and Video Genie. Nonetheless, Newkey is a nice program because it is so easy to use. What it does essentially is to turn a normal keyboard into a graphics keyboard. A number of other types of microcomputer can print a graphics character on the screen at the touch of a key, or perhaps at the touch of two or three keys. At any rate, they do not require the user to use CHR$(n). Newkey turns the Tandy/Genie into such a machine. If you want a graphic character on the screen just press a key and there it is. This makes the composition of drawings on the screen reasonably easy. Full cursor movement is not supported, but the program will convert a design into a packed string. Thus, if you type in A$ = '' followed by the graphics required, then those graphics will be packed into A$. If A$ is preceded by an appropriate line number then, of course, the packed string becomes part of a Basic program. It may be saved to tape and reloaded as required.

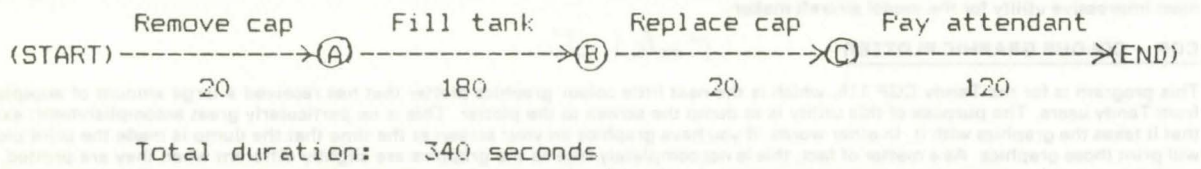
A FREE HANDOUT

One of the problems that a Model 4 owner has if he also possesses a hard drive is to get that hard drive operational with his machine running in both Model 4 and Model III mode.
Powersoft, the publishers of Super Utility and Super Utility Plus and many other programs that we stock, have prepared a Paper on doing just that. It discusses and explains the problems of using a hard drive to be accessed by both TRSDOS 6.x and LDOS 5.1.x. It also details a solution to the problem.
We will supply this free on request, but we must ask that such requests be accompanied by some sort of order. In the past we have not stipulated this, and have found ourselves supplying information, sometimes quite valuable information, to people we have never heard of and from whom we never hear again.

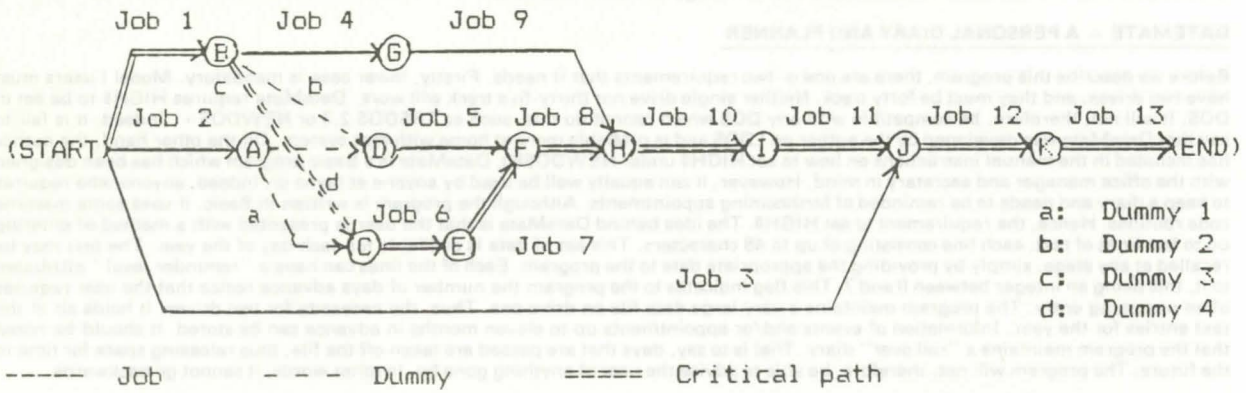
CRITICAL PATH ANALYSIS — OR PERT, IF YOU WISH

We have a boast at Molimerx that at no time during the last seven years have we distributed a program with a catastrophic fault in it. In other words, a program that simply did not work. This proud record is still maintained. We have distributed many programs that had deep seated bugs in them, but none that simply did not work. There is one, however, that nearly got through, and that was called Critical Path Analysis. It got into the old Catalogue (you will not find it in the last two editions), but it was never distributed. Now, we are happy to say, we do have a highly efficient and versatile CPA program from a different author. It is written by Nigel Dibben and maintains his very well earned reputation as an expert programmer. As indicated above, some people, the Americans particularly, call critical path analysis PERT.

The theory of CPA, of course, is concerned with the timetabling of jobs or activities so as to find the most efficient manner of performing them. The manual gives a simple illustration of CPA which we will pass on now, because it is highly illustrative. If you take the task of filling your car with petrol at a garage, then there are essentially four jobs involved. Firstly, removing the petrol cap and inserting the pump nozzle. Secondly, filling the tank with petrol. Thirdly, removing the nozzle and replacing the cap. Fourthly, paying the pump attendant. Obviously, this is a very simple example, but from it you will see that job two relies on job one having been carried out — unless you want an awful lot of petrol on the garage forecourt. Additionally, there is little point in removing the nozzle if it has not already been placed in the cap aperture. And, of course, none of us is about to pay the garage until we have had our petrol. Thus, in this example everything proceeds logically from the beginning to the end and there would be little point in running CPA for such a task. Many complex networks, however, result from complicated tasks. They do not proceed logically at all and this is where CPA comes into its own. Furthermore, time is often of the essence. Even the total time taken by such a simple task as filling a car with petrol could be critical. The following is a very simple network resulting from the example, from which it can easily be seen that if, for instance, replacing the cap takes more than twenty seconds then the overall time of the task is increased.



Take another illustration. Suppose removing the cap, rather than taking twenty seconds takes forty, then the overall time of the task is increased, but so also is the time taken in getting to event B. From two hundred seconds it would be increased to two hundred and twenty. This might affect later parts of the job. The following illustration shows a network for a rather more complicated task.



CPA is a highly useful tool to the product planner. Apart from the network data, a fairly simple histogram can be supplied by the program. A maximum of one hundred jobs may be entered and one hundred events. An event, incidentally, is a division between two jobs. Thus, in the first illustration above there are three events, A, B and C. In that illustration, of course, four jobs automatically mean three events. With ordinary networks this is not true. When the maximum number of jobs and events is used, the character count for the names is restricted to five. In more normal usage, the maximum job names are twenty characters. Job categories are also available. They are given a numeric value from 0 to 999 and thus there are one thousand available. The duration of a job is taken as an integer between 0 and 999 in the units chosen by the user. The program comes with a useful explanatory manual written by Nigel Dibben. The versatility of the program can best be shown by listing the main menu as follows:

```
                        M A I N   M E N U
                        =================

 -->   ENTER OR AMEND JOBS                File:   CPATEST0/CPA:3
       LIST JOBS & PRIORITIES             Date:   24/04/83
       LIST JOBS & DURATIONS              Units:  DAYS
       ANALYSE NETWORK                    Mode:   No analysis
       COMPUTE EVENT TIMES                Jobs:   13
       ENTER OR AMEND EVENT NAMES
       LIST JOBS & TIMINGS
       LIST EVENTS & TIMINGS
       LIST CRITICAL JOBS IN ORDER
       BAR CHART OF JOBS
       LOAD DISC DATA
       SAVE DATA TO DISC
       END OF PROGRAMME
```

Four demonstration files are supplied with CPA. The first contains data with no analysis carried out. The second, data networked only. The third, fully networked and computed with most likely times. Finally, fully networked and computed with mean times.

PORTACALC — A SPREADSHEET FOR THE MODEL 100*

The acceptance of this spreadsheet program is indicated by the fact that it has been reviewed in no less than two magazines recently. The Portable Computing Magazine in November 1983 said "All in all I find this to be a well designed and attractively presented package with excellent support. A package that did what it was supposed to do." Portable 100 in October 1983 said "One thing is certain: software companies are going to be hard pressed to meet the standards of excellence pioneered by PortaCalc". From these quotations you will see that the reviewers liked PortaCalc. We did too. However, we must make one comment. Since the original Visicalc some years ago, spreadsheets have grown out of all proportion, until new software like Lotus 1-2-3 (which, incidentally, will shortly be available for the Tandy Model 2000) bears little resemblance to the original. The customer purchasing PortaCalc should not be under the misapprehension that he is buying a miracle. PortaCalc has to have 24K of memory, but even with that there is a limit to what it can do. Lotus 1-2-3, for instance, requires 256K! Subject to this disclaimer, PortaCalc is good. It has a capacity of twenty six rows and fourteen columns. What we liked about it particularly is that the built-in function keys are used well in the program. For instance, the F1 key is used to automatically home the cursor directly to the AA position on the spreadsheet. F2 and F3 are used for loading and saving files to and from cassette or RAM. F4 is another useful key in that it displays all the files in RAM from the PortaCalc environment. F5 offers formatting for the current work sheet. F7 turns on a view line to display formula and other information relevant to the current operation. F8 performs its normal function of taking you back to the Model 100 menu.

The program supports addition, subtraction, multiplication, division and exponentials. A feature worthy of specific comment is the ability to enter a problem on the command line and have its answer finish up automatically in a cell. Thus, for instance, if you enter 2 + 4 on the command line, the answer, 6, will be the value stored in the selected cell. Formulae, incidentally, may be edited so you are not locked in. Cursor movement is by way of the normal arrow keys on the Model 100. The program supports both labels and values, of course. The manual states that PortaCalc files may be re-formatted into DIF format used by Visicalc. Formulae, of course, are not transferred, just the values and labels.

PortaCalc comes with two add-on, or bonus, utilities. The first is called PortaPrint. The publishers of the Porta series, Skyline Marketing Corporation, call PortaPrint a Printing Utility and this is probably a reasonable description, although Formatting Utility would be better. The Model 100 contains a text editor which is unable to format documents. This is one of the reasons why we published CSTAR, mentioned elsewhere in the Catalogue. In some ways PortaPrint is similar to CSTAR, in that it enables some dozen or so formatting functions to be carried out on a text file.

The second throw-in utility is PortaDex. This is the program which is used to re-format PortaCalc files to the DIF format used by Visicalc. As mentioned above, its only restriction is that you cannot transfer formulae. DIF files are memory hungry. If there is a valid criticism of PortaCalc, it is that it needs more memory, even with 24K. Consequently no effort is made to store the DIF file in the Model 100 memory. It is immediately transmitted out through the RS232 or Modem port. The latter, of course, is available only on U.S. machines.

All in all, PortaCalc and the following two PortaStat and PortaMax are well produced, well thought-out programs. They all come in an attractive A5 size binder. PortaCalc has a quick reference card of rather limited value due to the poor printing.

PORTASTAT — STATISTICS FOR THE MODEL 100*

PortaStat is a fairly comprehensive statistical package for the Model 100 portable computer. It has been designed to make available many of the most commonly used statistical procedures in a single interactive and easy to use package. It has been tailored specifically for the Model 100.

1. Descriptive statistics: mean, standard deviation, and standard error or mean; correlation and covariance.
2. Simple and multiple linear regression. Basic analysis of variance tables and F and t-tests are produced, and forecasts of future values based on the regression relation can be made.
3. Extensive data manipulation and editing capabilities, including variable transformations.
4. Output reports are formatted to display one screenful of information at a time — no lunging for the PAUSE key to prevent information from scrolling off the screen. Optionally, output can be directed to a printer or attached terminal.
5. All procedures are called with simple four letter commands. Some of the most common procedures can also be called with the built-in function keys.
6. User specified dimensioning of data arrays allows optimal use of your machine's memory configuration.

One of the big advantages of PortaStat is that it maintains compatibility with PortaCalc, described above. Data files can be written to or read from cassette or RAM in either PortaCalc format or in a more compact form used by PortaStat.

PortaStat contains twenty four commands, eight of which are assigned to the function keys. Of particular interest is the F1 key which permits the user to choose between keyboard entry, or PortaStat or PortaCalc files. Files, incidentally, may reside in RAM or cassette and can even be loaded through the RS232 port. Although PortaStat is not intended as a graphic program, it does contain the ability to construct a screen scatter-plot of any two variables. Altogether PortaStat is a useful statistical package with the very real advantage of being able to mate with PortaCalc. Although PortaStat can be run on a 16K machine, operations in that mode would be rather restricted. It is primarily intended to run on a 24K or larger configuration.

PORTAMAX — LINEAR PROGRAMMING ON THE MODEL 100*

The limitations on the Sale of Goods Act, and whatever other legislation they have got out there, must be set aside when considering our description of this program. We have literally nil knowledge of the subject, and in the main will be quoting from the American publishers' sales sheet. This defines linear programming as the powerful simplex method for finding the optimum mix for a given set of constraints. Put into English, we are told that this means that if a manufacturer is about to produce, presumably for the Christmas market, a plastic bag full of mixed nuts, then this program will assist him to find the optimum number of the various types of nuts to be included in the bag, taking into consideration profit, availability, and so on. The problem is reduced by the user to an algebraic-like form, although it is not algebra.

Skyline, the American publishers, in their sales literature state the following:

1. PortaMax is very flexible and easy to use. Models may be entered directly from the keyboard in a natural form similar to the way they would be written out. Alternately, Skyline Marketing's PortaCalc spreadsheet program may be used as a text editor to prepare models for input to PortaMax. Models of any form involving continuous variables can be entered and solved. There is no need to transform a model to a "standard" form or specify a starting solution, as is often the case with microcomputer LP programs.
2. Complete solution reports, including reduced cost, slack and dual price information are produced. Optionally, range (sensitivity) analysis can be performed to test for the sensitivity of the optimal solution to uncertain parameter values. Output reports are tailored to the screen size of the Model 100: one screenful of information is displayed at a time with a pause to allow examination of data. Output can also be routed to an attached printer or terminal and formatted for the larger page size usually available.
3. Several editing functions make it easy to ask "what if?" questions about the effects of model changes.
4. Procedures are called with four letter commands entered from the keyboard or using the function keys.
5. User specified dimensioning of model size allows optimal use of your machine's memory configuration.

PortaMax requires at least a 16K Model 100 to run, although it is primarily designed for 24K or larger configurations. Model descriptions may be saved to cassette files, or if you have room, to RAM. A printer is optional.

A detailed user manual accompanies the PortaMax program. The section dealing with general operating instructions uses a simple LP model to illustrate the procedures. By following along with your computer, you can use this section as a tutorial. The Reference Guide section lists each command, along with a brief description of its purpose. A list of all prompts and appropriate responses to them, and a description of output produced by the procedure (if any) is also included. Each command is also listed in the table of contents, along with a one line description of its purpose. A short bibliography is also enclosed."

As you will see from the asterisk next to the title of this program, a review is available.

REVIEWS

We think that we have already mentioned that we have a review available for the CP/M 2.2 Model 4. Two other reviews are for Hexspell and Triumph of Rome. Otherwise, the reviews are as per the Christmas '83 listing and any asterisks inserted in program titles since.

PRO LC – THE C COMPILER AND EDAS FOR MODEL 4.

Elsewhere in the Catalogue you will find described rather fully the C Compiler running under LDOS 5.1.x. Misosys delayed introducing this package for the Model 4 running in Model 4 mode, but it now available and is listed in the Index. It is not described at this time, because of the previous description to which customers are referred.

8" DISK SPECIAL OFFER

Molimerx is discontinuing the supply of 8" floppy disks and would like to clear out its existing stock. The normal price from either ourselves or Tandy is £29.95 for a box of ten, including V.A.T. Whilst they last, we are clearing at £19.95 for a box of ten including V.A.T. Shipping is £1.75. All the disks are BASF eighty track single sided double density.

POWERSCRIPT – A CHEAPER WAY TO A BETTER SCRIPSIT

(see P194)

Many customers have the original Scripsit and are hesitant to spend the rather large amount of money required by Tandy for their newer Super Scripsit. With PowerScript you can sculpture your original Scripsit to contain the power of many of the newer word processors. In particular, it enables you to customise Scripsit to your own needs. Printer codes, for instance, may be defined. They may also be embedded in the middle of a line. The keyboard can be filtered and user definable printer filters installed. A sorted directory can be read into the disk whilst in Scripsit and a user definable Help file may be incorporated. Files may be chained together at print time. Most importantly for LDOS users, PowerScript will not crash programs protected in high memory. A certain amount of keyboard customisation is available. For instance, DVORAK layout is included as an installable option. PowerScript requires prior ownership of Scripsit, and it may be configured for all of the major DOSs including NEWDOS 80, LDOS, DOSPLUS and, of course, TRSDOS.

BSORT AND MOD 324 – A MIXED PACKAGE

This package contains two separate utilities both aimed at the Basic programmer. The first, BSORT, is a machine language sort utility which uses advanced sorting techniques for super speed sorts. It will sort almost anything including mid-string sorts, obviously string and numeric, but also index arrays and tag arrays. Both ascending and descending sorts can be carried out of course. BSORT is for use on the Tandy Model 4 in Model 4 mode, and requires TRSDOS 6.1.2 or 6.2.0 for correct operation.

Although the purpose of the second utility is not as obvious as the author of its title would have us think, it is in fact a program which will convert a Model III Basic program to a format usable by Model 4 (MOD 3-to-4!). Most utilities similar to this one are, in fact, transporters. That is to say, they will transport or carry a program from one format over to another, but leave the user hanging when the program gets on to a new machine. MOD 324 goes considerably further than that and is even capable of adjusting the print locations for the different sized screens used by Models III and 4. Obviously, it cannot carry out all the conversions necessary but it does go part way towards that by pointing out the lines in the program, now on the Model 4, that will require further attention.

MODEL 4 CP/M

Now that the Tandy 3.0 CP/M is available we have had to consider whether we should switch to that and away from the Montezuma Micro 2.2 version. To our minds the Tandy version suffers from two deficiencies. First of all, and perhaps less importantly, it is comparatively slow. Secondly, and most importantly, it does not contain any provision for accessing any other formats of CP/M. The Montezuma Micro version, on the other hand, is reasonably fast, although not as fast as some 2.2 CP/Ms. It also has the very big advantage of the INTERCHANGE utility. The newest version, 1.42, in fact has had some half-dozen more formats added.

Against the background of these pros and cons is the fact that, at least as we go to press, the Tandy has the big advantage of costing pretty well half the price of the Montezuma. It also comes with one of the most excellent sets of documentation that we have seen Tandy put out. There are, in fact, two slip boxes with a binder in each, and each binder contains two or three manuals. A complete list is:

- CP/M Plus TRS-80 Model 4 Reference Manual
- CP/M Plus Programmers' Guide
- The Debugger Reference Manual
- CP/M Plus Users' Guide
- CP/M Plus System Guide
- Programmers' Utilities Guide

There are also some reference cards. In fact, you could almost say that the price (see Index) of the Tandy version is justified by the documentation alone.

So far as our position is concerned, we have decided to compromise. We will stock the Tandy CP/M as our main CP/M for the Model 4, but the Montezuma Micro will be available from us as well. We will be stocking lower quantities of the latter, however, so it is not beyond the bounds of possibility that we may be out of stock from time to time. Our guess is that Montezuma will have to lower their price. It might be worthwhile giving us a telephone call if you are trying to make a purchasing decision on either one or the other.

UPDATES

POWERDOT II

The upcoming update to this program is mentioned in the last listing and has been available for some weeks. The update costs £12.00 plus V.A.T. An entirely new manual is supplied, so the whole package must be returned to Molimerx. Note that it is mentioned on page 165 of the Catalogue that PowerDot now comes in different versions, so it is essential that we be informed of the printer being used.

TRSDOS 6.2

Logical Systems have now released to Tandy their update to TRSDOS 6.1. We are not sure when Tandy in the U.K. will have it, but as with previous versions we will be happy to update original Tandy disks at a charge of £6.50 including V.A.T. and postage. Apart from the usual collection of bug corrections, one of the biggest enhancements is a DOS Help file.

PAGE FILE

It is debatable whether or not this is an update, because the very important enhancements that are now included in the package essentially mean that the program had to be re-written. This program is now, to all intents and purposes, index linked. This is probably not exactly the right phrase to use, because if you read the write-up of Page File in the Catalogue you will see that it is a rather novel

type of database, whereby all the information is held as in a book. What the author has now managed to do is to provide each of the files with an index, thereby including such a system's obvious advantages in the program.
The opportunity has also been taken to de-automate the allocation of high memory. Page File uses an area of high memory for various purposes and was giving some difficulty when LDOS or DOSPLUS were used as the disk operating systems. Those DOSs use high memory extensively. Many customers have purchased Page File in the past, and we hope that a lot more will do so now that even further improvements have been made. It is an excellent program. We use it here at Molimerx quite frequently, and it is about the only database program that is used extensively by the staff on their own personal computers. It is very handy, very easy to use, and we cannot recommend it too highly.

PASCAL 6.1

The 6.1 version of Pascal is now available. GET may now be used with TEXT files. The type may now be referenced in the declaration of a new pointer type before its own declaration, thus bringing this Pascal into line with the Pascal standard. The performance of FOR loops has been further improved; space savings have been made in some sections of the compiler which now effectively runs a lot more smoothly. Two or three obscure bugs have been corrected. There is no surcharge on this update. The fee is, therefore, £2.00 plus V.A.T. plus 75 pence shipping making £3.05 altogether.

Hints and Tips — April 1984

Looking back over the last few columns of Hints and Tips it seems that I have inadvertently been concentrating on news of the industry or on new products. This month I will try and get us back on course to discuss a couple of technicalities in programming which, I suppose, is what the column was really started for.
As you will realise, here at Molimerx we get a lot of programs submitted to us for publication (thank goodness), so we are in a rather unique position to comment on the coding that various authors use. One thing has struck me quite strongly over the last few months, and that is the few programmers who use the logical tests on the TRS-80 and Genie machines. This came home to me particularly, when a customer coming across the statement in a program, ...(A = 4)..., maintained strongly that this was giving him a syntax error on his machine. To cut a long story short, although a competent programmer, he was not familiar with the logical operators available in the Microsoft interpreter. For Tandy people they are explained quite fully on pages 8/15 to 8/17 of the Basic Manual. In the Genie manual these tests can be found on pages 9 and 10. The latter is not all that good, however, which indeed may explain why one sees the logical operators used so little. I would suggest the Genie people borrow a copy of the Tandy manual.
I will give one example which came up in a program I was writing the other day. For reasons which are not relevant, I had to do things with a set of figures: 5, 10, 15, 30, 40, 45 and 60. I wanted to relate those figures to a consecutive series going from 1 to 7. There are many arithmetical ways of doing that, but you would be surprised at the number of people who code it to test the variable containing the 5 and if positive substitute the 1; test the variable containing the 10 and if positive substitute the 2; and so on. If you use logical operators, the several lines of testing code can be reduced to one simple and fairly short line (line 20) as follows:

```
10 INPUT NT
20 PRINT NT*5 + ABS[10*(NT = 4) + 15*(NT = 5) + 15*(NT = 6) + 25*(NT = 7)]
30 GOTO 10
```

I do not put this forward as perfect code, incidentally, as I am sure it could be improved but it does give an indication of how much easier it is to use the logical functions in the interpreter. The variable NT above is to contain the series of numbers from 1 to 7. Each time it is loaded with the appropriate number it will print the 5, 10 ... series. Thus, if you input 5 the figure 40 will be printed, and so on. The reason this works is because of another matter which is often sadly overlooked by the programmer. This is the order in which the interpreter carries out its arithmetical functions. Calculations in parenthesis are always carried out first. Thus, when the machine looks at the equation in line 20 the (NT = 4), etc., is considered at the start. Let us have a closer look at this equation. If the logical operators are true then they will evaluate out to -1, if false to zero. The ABS will convert into a positive 1. Hence, for instance, if NT is 4 then 10*ABS(NT = 4) will equal 10 because NT = 4 will evaluate as negative 1 and the ABS will convert it to a positive. For the first three times, therefore, the equation with NT equalling 1, 2 and 3, the whole equation after the first 5 evaluates to zero. Hence, for 1, 2 and 3 we get 5, 10 and 15.After that it depends which logical operator is correct.
The use of logical operators should always be considered when one has to manipulate numbers in one way or another. I remember, some years ago now, that the first article I ever had printed in Personal Computer World contained the code for a straightforward hunting game. I was very green so far as Microsoft Basic was concerned, and printed a faux pas rather like the one that we are discussing. I cannot remember the details of it, but I know I did about three If ... Then tests, whereas I could have done just a few characters of code using logical operators. I remember one gentleman writing a very caustic letter to the magazine. Anyway, the moral is, if you are not well up on logical operators read again the section in your manual, and whenever you are mucking about with numbers and find yourself testing quite a few, consider whether the approach I have suggested would be better.
Another misconception on the same subject, incidentally, is a rather simpler example. Some programmers have so overlooked the area, that they think a statement such as IF A is syntactically wrong. Try this little piece of code:

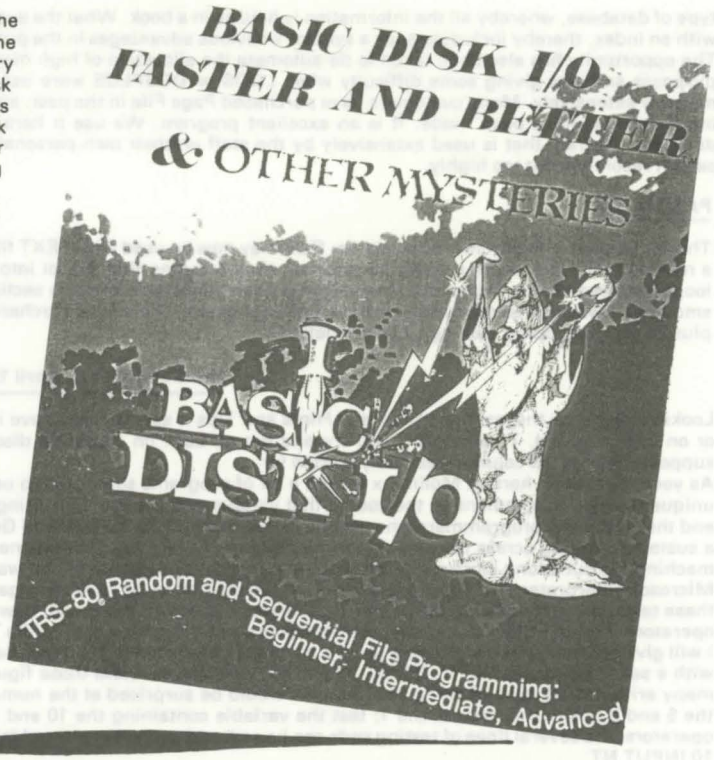
```
10 INPUT A
20 IF A PRINT "YES"
30 GOTO 10
```

There is nothing wrong with that code, and you will get a return of YES when the expression IF A is fulfilled. In other words, when it contains -1.
Now to a rather more complex subject. The Tandy Model 4 machine is proving to be a runaway success, particularly as it is backed up by the portable version, 4P. By the time you read these words, the 4P will probably be available in England as Tandy, I think, are scheduling for May. The 4P, incidentally, is a very nice machine. I was disappointed in it when we first got one, but when I thought about it I realised my disappointment was simply because I was not viewing the machine as a portable microcomputer, but subconsciously comparing it to the Model 4. Once one gets it into one's mind that it is a transportable, then one looks at it in a new light. It is about the size of a sewing machine and pretty much the same weight, perhaps lighter. It has a nifty way of maintaining compatibility with Model III software. In the full Model 4 the Model III ROM is present as a chip. In the Model 4P it is contained in a file on disk and is only loaded into the computer when the computer senses that the DOS being used is a Model III DOS. Anyway, I am rather getting off the point, but a plug for the 4P is not undeserved. The Model 4 and the 4P have the capability of 128K of RAM. As we all know, the Z80 can only address 64K of RAM, and we have had quite a few phone calls and letters asking how TRSDOS 6 (which, of course, is LDOS 6 and is licensed by LSI to Tandy) copes with the situation. There are a number of processors that address more area than their buss officially allows. I suppose the prime example is the IBM PC which uses the quasi 16 bit 8088. This uses a fairly horrific method of getting over the difficulty, namely segment addressing.
Although the concept of segment addressing is not very difficult to understand, writing code when one is in a segment machine can get very inelegant. TRSDOS 6, on the other hand, uses the Banking method, which is not only easy to understand but also is fairly easy to write for. In the Model 4 the concept is to split all available memory up into three banks, consisting of 32K each. They are numbered 0, 1 and 2. There is, in fact, another bank and this is called the system bank. The machine automatically and quite transparently to the user, switches whichever bank in that it requires. All of the memory, that is to say in a full machine 128K, is continually refreshed. The data in it is, therefore, maintained. Hence, when a bank is switched in whatever was in the memory when it was switched out is still there.
So far as the program is concerned, life could not really be much easier. TRSDOS 6 is SVC based. In other words, if one wants to make use of a routine in DOS, one does not jump to an absolute address but the programmer simply calls a specific SVC number. For instance, the @BANK supervisory call is number 102. When you first power up your computer, or alternatively press the reset key, TRSDOS 6 looks to see which banks of RAM are installed in your machine. As a matter of fact it maintains this information in just one byte by way of a bit map. There are, of course, eight bits to a byte in the Model 4, so presumably if it were not for the hardware incapability one could have eight banks. With the hardware as it is now, however, you have either 0 in a 64K machine, or banks 0, 1, 2 in a 128K machine.

Some people have said that we were rather unkind to the last Mysteries book, which was "How to Do it on the TRS-80". We can now make up for it by being very complimentary about this new one. It is called "Basic Disk I/O Faster and Better and Other Mysteries" and is written by Lewis Rosenfelder, who wrote a previous book in the series named "Basic Faster and Better and Other Mysteries" and, as one might gather, this latest offering is essentially a follow-on from the former.

It is a very big book. The books in this series are all of the same size, about A4, but the number of pages in I/O Faster and Better is 430. It weighs a kilogram! Despite its size, there is not an awful lot to say about it because one can summarise it very easily by saying that it describes every nook and cranny of input/output to disks from TRS-80 Basic that one can think of. We have never seen such a complete treatise on the subject. One is taken into the subject nicely and easily, mostly through a thorough description of the various I/O commands. Naturally, the book covers sequential files as well as random, and most importantly gives a very large quantity of tips on highspeed access. Not only are Indexed Sequential Accessing Methods (ISAM) described, but also the author's own version of that technique, which he calls TREESAM. Although most of the book is concerned with Basic, one chapter is dedicated to a technique which Mr. Rosenfelder calls KEYACCESS, a machine language subroutine, which a Basic program can call for high performance keyed accessing of a disk file.

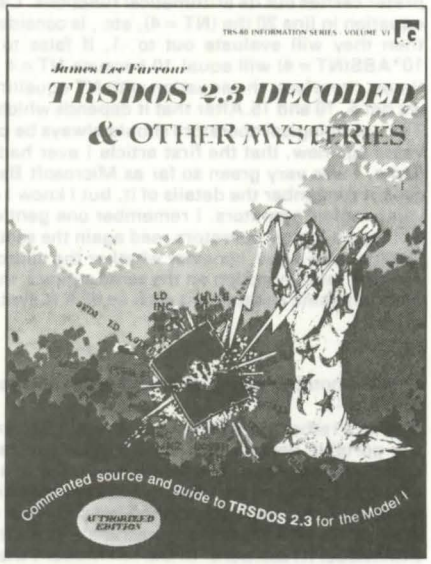
The book will be a sure fire winner for those customers who enjoyed the original book, but one defies anybody reading the book not to learn something from it.



SALE! SALE! SALE!

TRSDOS 2.3 DECODED AND OTHER MYSTERIES

Some of our older customers tell us that they can find out what we think about a program or product from the way that we describe it. It is a pity that we do not really know how this interpretation takes place because it would be useful to easily convey to our customers when a particularly outstanding product comes along. So much sales talk goes on nowadays that you cannot believe anyone. Hoping that we will be believed, we would like to say that this, in our opinion, is the best of the six "Mystery Books". Of course, you have to own disks or be interested in disk operation, to be able to use it. There has been a long history of disk operating systems for the Tandy and Genie machines upon which we have had occasion to comment from time to time in this catalogue. Sophisticated DOSes have stepped a little bit away from the original standard, but whichever way you look at it TRSDOS, is the basic standard disk operating system for the Tandy and, therefore, the Genie machines. LDOS in particular adds so much that it is hard to decipher the original TRSDOS influence, but it is there. If you understand TRSDOS therefore, then you have a very firm grip on disk operation for these machines. Furthermore as it is the basic skeleton which the sophisticated DOSes have fleshed out, it follows that with some extra work a thorough understanding of TRSDOS can be expanded to a thorough understanding of any disk operating system for these machines. James Farvour, the author of this new book, is also the author of Microsoft Basic Decoded and Other Mysteries. That was a fantastic book and we doubt whether there is anybody seriously involved with these machines that does not refer to it continuously. It did, however, have one big failing and that is that, for copyright reasons, it was unable to include the entire disassembly of ROM. Very kindly (and we feel they should be complimented for their foresight) Tandy have granted permission whereby TRSDOS 2.3 Decoded can list the entire Disassembly. The book consists of 300 pages. We doubt whether there is a single one that is not packed full of information to anyone interested in disk operation. Farvour has a nice style of writing. He seems to have the knack of being able to include sufficient detail to understand the subject but not so much that one gets drowned.

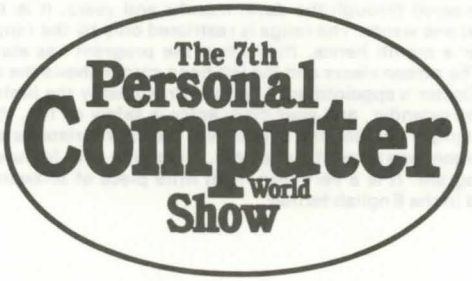


The book is divided into 10 chapters and two Appendices. Appendix 1 contains data structures and SYS0 entry points. Most importantly perhaps, after the data structures, are given cross reference lists for SYS0 to SYS2 inclusive. The second Appendix is a complete annotated disassembly of SYS0 to SYS6 and BOOT/SYS. The bulk of the book, that is to say the 10 chapters, are devoted from Chapter 3 to Chapter 10 inclusive to a close description of each SYS file and are liberally sprinkled with illustrative disassemblies. As we dictate this listing we have had the opportunity to go through the entire book and it seems to us the most complete treatise on the subject that is ever likely to be available. Generally, the chapters literally start at the beginning of the SYS file being discussed and then go through a discussion of it byte by byte. The first two chapters are general or introduction chapters. The first one describes the Model I hardware and then there are two or three pages of Z80 description. Operating systems are then discussed generically. Chapter 2 starts with an overview of TRSDOS and then arrows in, to tie up with the general information given in Chapter 1, to the particular applications of it to TRSDOS.

It is difficult to say what level of knowledge is required in order to assimilate this book. The Preface says that it assumes a knowledge of "basic computer architecture and Assembly language program". This is probably perfectly fair, but might downgrade the book a little. The commenting is so full and explicit that we are tempted to say, that so long as one knows, or has a list of the Z80 mnemonics, then the reader will get more than his money's worth.

IJG, the publishers of the Mystery series, apparently have a vast over-stock of this book. They have offered it to us at just over half price, so we are passing this saving on. The regular price is £19.90. While stocks last the book is available to you at the amazing price of £12.00!! It is a book so there is no V.A.T. Shipping is £1.50.

JULY 1984 LISTING



The organisers of the exhibition tell us that we should receive our normal quota of complimentary tickets for the PCW Show. These are available to customers on a first come first served basis.
Molimerx will be on Stand 117, which is on the lower level at Olympia 2.

TANDY TO IBM, IBM TO TANDY – TRANSFER BETWEEN TANDY MODEL I/III AND IBM PC

This is a utility which enables the user to transfer files from an IBM PC to a Tandy Model I or III, or vice versa. It represents a far more convenient method of carrying out this chore than connecting the two machines via their communications ports. Everything is done on disk. The work is carried out on a Model I or Model III Tandy. The disk that is supplied is compatible with either of those machines and is, in fact, an LDOS formatted disk. The IBM disk to which the programs are to be sent, or from which they are to be recovered, must be a standard IBM or MS-DOS in single sided double density format. There are one or two restrictions or stipulations which should be made about this program. First of all it is compatible with LDOS only and the current version, that is to say 5.1.4, must be used. On the Model I, the Tandy machine (or appropriate Genie) must be modified for double density as that is the format of the IBM disk. The final stipulation is really more of a warning. This program started life as a strictly inhouse utility. Such software is not padded with as many helpful user friendly comments and error traps as are programs for commercial distribution. To a large extent, before bringing the program to market, we have inserted various error traps and so on, but the program is still cryptic and is not intended for a novice. On the other hand, no particular skill is needed. The program is entirely interactive, but the prompts and so on are rather abrupt. The Tandy Model III, of course, is already double density, so Transfer will work on a standard machine. Transfer will also work on the Tandy Model 4 machine in Model III mode. No tests have been made on the Model 4P.
Transfer will probably be used mostly to exchange Basic programs between the machines. There would be little point in sending machine language programs over, because the IBM and Tandy use different microprocessors. Data files can exchanged. The program is governed by two menus. The short one, which will probably be used most often, simply consists of the options to transfer from IBM to Tandy or vice versa. The other menu will be of particular use to experienced users, and enables the operator to carry out a number of discrete functions. Obviously, reading and writing to a disk where different formats of disk are involved is a complex business. This program has been written in modularised form and the user is given the option, through the large menu, of accessing these various functions. Thus, for instance, he can examine the directory of the IBM disk, its file allocation table, and so on. We would re-emphasize that this latter menu is of no interest to the operator who merely wishes to transfer files. It does, however, give an interesting insight to the makeup and functions of the disks, particularly the IBM, to a user who is interested in such things. For the normal user, the transfer of files is almost entirely automatic. About the only thing the user has to do is to provide the appropriate file names.

LS-QFB/COMP – QUICK FORMAT AND BACKUP ON THE MODEL 4

One of the very nice advantages of grading up from LDOS 5.1.3 to 5.1.4 was the inclusion of a utility called QFB/COMP. The first acronym stands for Quick Format and Backup. QFB attains its speed chiefly because it literally formats and backs up each track in the same pass. There are three parameters which may be used with LS-QFB. The first is that the user may specify whether all cylinders of the source disk will be read and copied to the destination disk, or whether in the laternative only allocated cylinders will be used. The second parameter specifies whether or not a verify of the destination disk is to be performed on the write pass. The third parameter specifies whether or not a verification of the destination disk is to be performed. QFB, therefore, is exactly what it says – a quick format backup utility.
The COMP part of this package is a comparison utility so that two files, parts of files, diskettes or parts of diskettes, may be compared one to the other on a character for character match. There are a number of parameters that can be defined. A particularly nice one is the ability to send the display to the printer. In this way, one can effectively leave the program to do its own thing, finishing up with a nice printed output of any differences.

LS-LED – MODEL 4 VERSION OF LED

LED for Models I and III is described in full on page 83 of the Catalogue, and as you will see from that listing LED is a general purpose screen orientated text editor. It is designed to allow the creation and modification of ASCII and certain other types of text files, including many word processing files. For a full description please refer to page 83 of the Catalogue.

TOOLBELT – TOOLBOX FOR THE MODEL 4

Toolbox is described very fully on pages 141 and 142 of the Catalogue. Toolbelt is the Model 4 equivalent of Toolbox. The packages are almost identical. The contents of Toolbelt are as follows:-

PMOD6	PASSGO6	PCHECK6
PKILL6	PFIX6	PCOMPAR6
PREFORM6	PFIND6	PVU6
PMOVE6	PCLEAR6	PERASE6
PSS6	PDIRT6	PMAP6
PEX6	PFILT6	

The suffix 6 indicates, of course, that the utilities are to be used with TRSDOS 6.x.

DIARY – AN ENHANCEMENT TO THE MODEL 100

The Model 100 comes with a number of programs contained in ROM written by Microsoft. One of them is entitled SCHEDL and is a fairly rudimentary scheduling program. This program takes a number of the features of SCHEDL and converts them into a very interesting diary program. The best way to explain it is to describe how it is used. When the program is first entered the calendar for the current month is displayed on the screen. For non-Model 100 users, the 100 has a built-in clock and calendar, and maintains the current date and time internally. Thus, when the program starts it already knows the day and the time. The current date is highlighted on the calendar. By means of the arrow keys and other control keys the user can scroll through the days, months and years. It is therefore extremely easy to set the calendar to whatever day in the future, or past, that one wants. The range is restricted only by the range of the built-in calendar. Assuming that one wishes to diarise an appointment for a month hence, then when the program has started you simply scroll through to that day and month and press an appropriate key. The screen clears and the left hand corner shows the date that you have chosen. You are then free to type any ASCII characters, such as "Doctor's appointment 11 a.m." Presumably the limit to what may be typed in is one screenful. Any key is then pressed for a return to the calendar, and your diary entry is safely on file. When the day of the appointment comes along, or for that matter any other day, you simply position the cursor over the appropriate date, hit the L key and anything you have entered for that day will be displayed on the screen, one screenful at a time. A cassette save feature for the data is, of course, included. There is not much more to say about this program. It is a very nice, neat little piece of software ideally suited to a portable computer. All dates, of course, are entered and reported in the English format.

FILES – A DATABASE FOR THE MODEL 100

This is a straightforward database management program. In some respects it is similar to Database Management which we sell for the Model I and III. Files is actually about as straightforward a management program as you can get. In the ordinary way, the user creates his own field labels, such as name, address one, address two, and so on. This goes away into a file and from thereon the user, whenever he calls that file, is presented with the field labels and enters the appropriate data. Up to 21 fields can be defined. The maximum field length is 250 characters. It is essential that it be borne in mind, as with all databases such as this, that the entire file is brought into memory. So, although one can say the maximum capacity is 21 fields of 250 characters per field, if one attempted to use this maximum one would very quickly run out of memory. Unfortunately, with the Model 100 data cannot be pulled in from the storage media record by record, as it would take too long. Even some sort of ISAM system would be laborious. Consequently, the statistics mentioned must be qualified by the amount of memory available. There is no restriction on the number of records to a file, but again the above facts must be borne in mind. The amount of memory available in the machine is always an overriding parameter.

The features of Files are straightforward. Four types of search for selection may be carried out. Firstly, all records can be displayed. This is on an individual basis. In other words, the whole list is shown, but one record at a time. Two other, rather unusual, methods of display are to state a record key, and call for the display of all records before it and all records after it. Finally, the most important and, no doubt most often used, will be to do a normal search. This is on an in-string basis. That is to say, mit will pull out Smith. Successive occurrences of the same key are repetitively displayed.

The printout facility is rather nice. Reports can be prepared on the basis of any of the fields. Thus, one can select everybody of the same name; when the in-string feature is added a very powerful selection process can be made. For instance, one could select by part of a post code or by surname or by town, and so on. The print width is variable. The bottom line is used for prompting as with most Model 100 programs.

An added feature of Files is that input and output of files can be made to and from the RS232 port. If this is chosen then the parameters for the transmission/reception can be set from within the program. In other words, it is not necessary to go to the built-in software of the machine in order to set these parameters.

LS-DISKDISK – FILE EQUALS DRIVE

On page 162 of the current Catalogue is described this fascinating utility from LSI which creates a file on a disk, into another physical drive. Sounds highly incestuous but is, in fact, an extremely useful program. LS-DISKDISK is the same program for the Model 4 in true Model 4 mode.

WD SERIES 1 DRIVER – HARD DISK DRIVER FOR THE MODEL 4

If you have bought a hard disk from Tandy for use with your Model 4, then they will support you with the necessary driver. However, if you have bought a Rodine hard disk from Cumana or one of their dealers, then you can only operate it on a Model 4 in Model III mode. That is to say, you could only do that before now because that is precisely what this driver allows you to do. It will interface between the Model 4 in true Model 4 mode and a Rodine drive. It also supports a large number of other drives including Percom, MTI, COMPUKIT, MicroDesign and most other hard disks which utilise the Western Digital control board. WD Series 1 supports 5, 10, 15 or 20 megabyte drives. It should not be used with the Percom PHD hard drive units nor, of course, with the Radio Shack hard drive. A number of different partition options are provided.

ALPHABUDGET – FOR HOME OR BUSINESS

We already carry a number of home and small business finance packages. For instance, Money Manager and Electric Accountant. We think Alphabudget is worthy of being stocked, however, because it is tape based. The thrust nowadays is towards disk. Indeed, except for games it is difficult to find a newly published tape program. We have had a number of customers complain about this state of affairs – hence Alphabudget. It is, of couse, intended as a program to help the small businessman or private user manage his resources and expenditures. Expenditures can be divided into twenty-five categories. All of the category names are user definable. This information is saved with the data – the result of that being that the program can be used for any number of separate accounts. Typical data is entered once every month from the records of a deposit, current or savings account. Alphabudget keeps a running total of the year's deposits and expenditures under each category, together with the available balances. There is provision for an automatic monthly deposit of a budgeted amount into each account. Deposits and expenditures, of course, can be easily transferred from one account to another. Data is saved on tape; one of the many nice features of Alphabudget is the ability to verify the data. Another is that the printer is supported, and a report can be produced.

Alphabudget is menu driven. On first usage the categories have to be entered and a balance. Incidentally, one category (savings) is not an option and this will appear on the screen with a virgin file. One of the big advantages of Alphabudget is its interaction with the user. By way of the main menu and submenus, the user is guided all of the way. The report from the printer is monthly. Human nature being what it is, the balances will probably not be as expected, and as mentioned above it is possible to transfer between accounts to even the position up for the oncoming month. A final report at the end of the year is also available. The year, for the purposes of Alphabudget, can be defined by the user.

80 TRACK 100 TPI DRIVES

One hundred tracks per inch was something of an anachronism with regard to Tandy machines, or any other microcomputers. It was obvious from the start that 96 TPI should be the standard, because it is double the 40 tracks/48 tracks per inch. Nonetheless, for some year or so 100 TPI drives were available, but they have not been manufactured for some time now and we have decided to withdraw support for them. Henceforth Molimerx will not be able to manufacture any of its software to 100 TPI standard.

MODEL 4 HARTFORTH

We can now announce that HARTFORTH, our 79-Standard FORTH compiler, is available to run on the Model 4 in Model 4 native mode under TRSDOS/LDOS 6.x. Far from being a mere conversion, HARTFORTH-4 has been rewritten as a Direct Threaded implementation of Forth in contrast to the earlier HARTFORTH which used the more conventional technique for FORTH implementation of Indirect Threading. While these words may mean little to most of our readers the bottom line is that the speed of execution is greater with this form of implementation by between 10% and 40% depending on the details of the actual program. Coupled with the fact that in Model 4 mode the speed of the Z80 processor is double that in the Model 3 mode this gives a significant improvement in program execution time. This fundamental difference in this change of implementation is of course entirely invisible to the programmer writing in FORTH.

see page 144

Besides all the features outlined in the earlier extensive catalogue entry for the Model 1/3 HARTFORTH and the difference in implementation mentioned above, there are several other enhancements contained in HARTFORTH-4 as follows:-

a) A comprehensive set of editing functions are provided to enable the display and editing, in Hex or Ascii, of memory, disc files accessed by filename and sector numbers and of disc sectors accessed by track and sector number. Essentially this provides a complete disc "zap" facility and as with all these enhancements the FORTH source code is provided for you to alter and extend as you wish.

b) Improved floating point input and output routines that will accept and print integer, mixed and scientific format numbers.

c) The ability to compile FORTH source code from word-processor files.

d) An advanced machine code generator that is used instead of the Assembler to produce machine code where fast execution is required. However this machine code generator accepts normal FORTH words and compiles them into machine code and so does not need any knowledge of Z80 Assembler to be of use. Examples of the use of this generator are included so that you can see practical examples of its use.

e) The ability to redefine the Virtual Memory file from within a program if required rather than being able to accomplish this only from the keyboard as with previous HARTFORTH versions.

****
H A R T F O R T H
****

VERSION 4

A 79-STANDARD FORTH COMPILER
FOR TRS-80 MODEL 4

Sole Distributors:- Molimerx Ltd.,
1, Buckhurst Road,
Town Hall Square,
Bexhill-on-Sea,
E. Sussex.

SERIAL NO.

PASCAL – A TRUE INSTRUCTIONAL PACKAGE

When Tim Bourne approached us some years ago to see whether we would like to publish his, then, rudimentary version of a Pascal compiler we were very pleased to do so. Our optimism did not stretch to imagining the number of improvements and updates that it would go through in the following years. It is now one of the standards for Pascal and is accepted literally throughout the world.
Recently an enthusiast user in Winnipeg, Canada, wrote an instructional treatise based on our Pascal and hinged to a well-known book by David Price called Pascal – A Considerate Approach. This tutorial written by Don V. Rigg of Winnipeg takes Pascal version 6.0 or later and describes it in an instructional or tutorial manner, at the same time cross-referencing to David Price's book. This proves to be a particularly effective method of learning.
Although the tutorial package may be purchased at the same time as Pascal 6.x they are also available entirely separately. The tutorial package, if it is not purchased with the compiler, comprises two items – David Price's book and Don Rigg's tutorial. Our regular Pascal package contains the compiler, editor, etc. and the normal non-instructional manual usually supplied. The latter, incidentally, is required as it is frequently mentioned in Rigg's tutorial. There is a small discount available if the tutorial and the normal package are purchased together.

TYPITALL – NEW VERSIONS

Typitall is described fully on page 152 of the Catalogue. Apart from the fact that it received four stars in an 80 Micro review, its principal claim to fame is that to a large extent it represents an enhanced Scripsit at about half the price.
Typitall has now been vastly improved and totally re-written. First of all it is now available in a separate version for the Model 4 in true Model 4 mode. That is to say under TRSDOS 6.0. Apart from that, on all versions there is an optional interactive spelling checker. At the moment this contains a dictionary of about 30,000 words. The author is apparently working on a larger one which should be available at a low update charge in two months.
There are now three versions of Typitall. The first is a demonstration version. This is priced very low, of course, and enables people to become conversant with the program without paying the full price. The only way in which the author could think of doing this was to include all of the editing program, but without the ability to save text to disk. This had two results. Firstly, the price, although far less than the full package, is still a little more than one would expect for a demonstration package. Secondly, the demonstration package is viable for use as a stand-alone piece of software. Some word processor users, of course, have no cause to save to disk. Such users, therefore, can purchase this demonstration version and save themselves a great deal of money. The second version is the straight Typitall, and the third is Typitall including the spelling checker. Upgrades are available from one version to another simply by paying the difference in price.
Typitall is now fast becoming one of the leaders in the word processor race for the TRS-80 and compatible machines.

EQUIPMENT SALE

Once again we are finding ourselves with surplus equipment. On this occasion it is because of our cessation of support for 80 track 100 tpi drives mentioned elsewhere in this list. We therefore have the following drives available for sale:

One pair 80 track single sided 100 tpi TEAC FD-50C	£180.00 pair
One 80 track single sided 96 tpi TEAC FD-50E	£125.00 each
One 40 track single sided 48 tpi TEAC FD-50A	£80.00 each
Two 40 track single sided 48 tpi SHUGART 400	£70.00 each

All of the above drives are complete with their own power supply and cases. The one pair, of course, cannot be separated. We would like to make the same disclaimer we always make when we sell surplus hardware. We are not in the equipment business. All of our equipment is maintained on a regular basis and is in full operational order at the time of sale. Any person who wishes to buy may come down and see the equipment actually operating before they buy. Beyond the above we make no guarantee, warranty or anything else. The purchases are made strictly on the purchaser's own liability.

HARTFORTH – FOR THE MODEL 4

see opposite sheet

This program continues the policy of Molimerx to make as many programs as possible as quickly as possible compatible with the Model 4. Hartforth is a full Forth implementation and has achieved an enviable position in the Forth community. It is described fully on pages 144 and 145 of the Catalogue. However, the Model 4 Hartforth is not just a conversion. It has been totally rewritten as a Direct Threaded implementation of Forth in contrast to the earlier Hartforth which used the more conventional technique for Forth implementation of Indirect Threading. This means that the speed of execution is greater with the Model 4 implementation by about 10% to 40%, depending upon the details of the actual program. In addition, of course, the Model 4 processor runs far faster than the Model III and there is, therefore, a very considerable improvement in program execution time. This fundamental difference between Indirect and Direct Threading is, of course, transparent to the user. In addition to the details on page 144 to 145 of the Catalogue, the following improvements are contained in the Model 4 implementation:-

1. A comprehensive set of editing functions are provided to enable the display and editing, in Hex or ASCII, of memory, disk files accessed by filename or sector numbers and of disk sectors accessed by track and sector number. Essentially this provides a complete disk ''zap'' facility, and as with all these enhancements the Forth source code is provided for you to alter and extend as you wish.
2. Improved floating point input and output routines that will accept and print integer, mixed and scientific format numbers.
3. The ability to compile Forth source code from word processor files.
4. An advanced machine code generator that is used instead of the Assembler to produce machine code where fast execution is required. However, this machine code generator accepts normal Forth words and compiles them into machine code and so does not require any knowledge of Z80 Assembler, to be of use. Examples of the use of this generator are included so that you can see practical examples of its use.
5. The ability to re-define the Virtual Memory file from within a program if required rather than being able to accomplish this only from the keyboard as with previous Hartforth versions.

WHALE OF A SALE – LAST CALL

This sale proved to be very popular. We will try and repeat the exercise in a few months time. Meanwhile, as always with sales, we are left with a few oddments. The only item which was totally unpopular is Balloon Attack. It is described on page 150 of the Catalogue and is rather an odd program, in that it comes with fully commented source code. It is for the colour computer and, I suppose, indicates how few people are writing arcade games for that machine. In order to clear this excess stock, we are offering this program either on tape or disk for £5.00 plus VAT. In other words, £5.75. Such a price would attract programmers even if they have a machine other than the colour computer.
We were very pleased that InfoScan sold well. We have always been most impressed by that program. We have, therefore, spoken to the publishers and arranged for a lower price in consideration of higher buying quantities. We are, therefore, now able to maintain the sale price (with a small exception – that it will be the VAT exclusive price) permanently. Thus, as you will see from the current index, InfoScan is now priced at £29.90 plus VAT – and we have plenty of them!
So far as the remainder of the sale is concerned, we are having to have a firm cut-off date, and this is 31st July. Any orders from the sale received before then we will try and fill. We cannot accept any orders after that date. On the 1st August prices will return to the index price.

ZSHELL – ON LOAN FROM UNIX

One of the most attractive features of the UNIX operating system is SHELL, the command language interpreter. The shell provides for the parsing of arguments and has the ability to redirect standard input and output pipelines. LDOS users will know they can already ROUTE various devices. ZSHELL goes further with standard I/O redirection. The standard input of most microcomputers is the keyboard. The standard output is usually the video display. As we have said, LDOS already permits redirection with ROUTE, but under the UNIX shell concept standard I/O redirection allows the user to temporarily route either standard input, standard output or both for the duration of the execution of a command. The original device linkage is restored automatically after the shell has been used. Thus, programs written to use standard input and output devices can easily use any device with this temporary redirection, and this even applies to files. An example given in the manual is that of an LDOS user who wishes to run the programs from the sophisticated Job Control Language, which uses the single key input routines @KEY or @KBD. JCL is not capable of automating such an operation with @KEYIN. With ZSHELL any program that used the LDOS keyboard driver can be operated so that its input is fetched from such a disk file. Furthermore, control is automatically passed back to the keyboard when the input gathering of the program reaches the end of the file.
Piping, both under UNIX and other disk operating systems, operates in a multi-processing environment. In other words, the executing program communicates its input to the input of another executing program. Communication between the two programs is visualised as a "pipe". LDOS does not provide multi-processing, but ZSHELL will execute the pipe as a temporary file as the input to the second.
In addition to ZSHELL a utility called WC by Roy Soltoff is supplied as a bonus. This is a wild-card shell processor which allows the user to invoke compatible commands on all file specifications which match a wild-card specification entered on the command line. As will have been gathered from the above description, ZSHELL is intended for the more experienced user and is compatible only with LDOS 5.1.x.

SYSTEM DIAGNOSTIC – NOW FOR THE MODEL 4

see p60

System Diagnostic is now available for the Model 4 in true Model 4 mode. That is to say, TRSDOS 6.0.

SMART TERMINAL – NOW FOR THE MODEL 4

Smart Terminal is now available for the Model 4 in true Model 4 mode. That is to say, TRSDOS 6.0.

MONITOR 5 – NOW FOR THE MODEL 4

Monitor 5 is now available for the Model 4 in true Model 4 mode. That is to say, TRSDOS 6.0.

UPDATES

MORSE CODE COMMUNICATOR

This program is now available for the Model III in addition to the Model I.

LDOS – HELP PROGRAMS

This is somewhat of a downdate rather than an update. Logical Systems describe their software by LDOS version number rather than by machine. Thus, if, as is so in this case, the programs are for 5.1.x, they are assumed to work on Model I or Model III. In fact, the Help system will work on Model I, but it is tremendously unwieldy unless a double density board is installed. Help files are notoriously large because they are mostly ASCII, and it is simply not possible to distribute some of the Help segments on single density disks. Please note, therefore, that the LDOS Help system for 5.1.x is to be distributed for Model III only. The index has been changed accordingly.

SYSTEM DIAGNOSTIC

This is now available with a revised manual. One or two bugs have been corrected.

SMART TERMINAL

A new manual with one or two fairly minor new features.

TYPITALL

This is more than an update and is dealt with separately in this list.

MONITOR 5

One or two fairly minor improvements, such as lower case being accepted and a search and replace feature on the byte and find word commands.

Hints and Tips – July 1984

Well it happened! After more years than I like to think about in the computing business a hard drive went down. There I was, happily minding my own business when the familiar hum of the hard drive suddenly disappeared. As a matter of fact it was a minute or two before I realised what had happened. Then my heart started to pound (it was a 20 megabyte drive!), and I fast turned to my Backup Ledger. Calm was restored when I saw that the drive had been backed up the day before. This is a true story, it happened just recently. I report it solely to emphasise the critical necessity of backing up mass media devices. It is so easy to go on using a hard disk or an 80 track double sided double density, or whatever, and continually put off the chore of backing up. There is really no valid reason, except laziness. In the Catalogue you will find described a program called Backrest. This is a truly fantastic piece of software from the whiz kids at Powersoft. It will backup a 20 meg hard disk literally in a matter of minutes instead of the hours it can take. The reason that it achieves this speed is that it backs up by track and sector rather than by file. As a matter of fact, Backrest is so proud of the speed with which it backs up that it actually times itself and comes up with the total time lapsed. Of course, most of the machines that it will be used on do not keep accurate time in England anyway, so that feature is of doubtful validity! Anyway, the point that I do think is worth emphasising is that the easier the method of backing up mass media, the more likelihood that it will be carried out frequently and, therefore, the more likelihood that a hardware failure will not necessarily prove to be a catastrophe.
I do not seem to have very much to say this month in the way of Hints and Tips, so it might be a good time for me to fill you in a little on life at Molimerx. Probably the most important current thing on our minds is the fact that we have decided to go to the PCW Show this

September. Older customers — and believe it or not we still have many that were with us in 1978! — will know that we attended all of the PCW Shows up until last year. We were and are somewhat disenchanted with microcomputer shows. They were bags of fun to begin with but now they represent not only a great deal of work for a large number of people, but also the very large number of attendees nowadays inevitably means that it is difficult to achieve the object of the show, which is to meet and chat with our customers. Anyway, for better or worse we will be there in September. As usual any customers who have particular matters in mind to talk to us about will be well advised to give us a phone call a few days before the Show, so that if it is necessary for us to take up any particular program or documentation then we can do so. As usual, we will be selling programs from the stand and will be bringing up stocks of the more popular software. So, give us some warning if there is an older program that you need, particularly if it is on cassette.

Apart from the exhibition, life continues here much the same as it has always done. We are particularly excited about our thrust into the Sanyo market. In co-operation with MichTron in the United States we have been responsible for introducing almost 30 new programs to the Sanyo community. Our main business is still the TRS-80, however, and I think it will always remain so. Poor old Tandy had a rough time in 1983. Everybody tended to go IBM-mad and some Tandy onlookers got despondent. I never accepted that theory, and I think (for once) I have been proved right. Tandy worldwide is coming back in no uncertain terms. The last few months, for instance, have for the first time in a couple of years witnessed new independent TRS-80 houses. This revival is probably due to the Model 4 and 4P. A lot of it is also to do with the Model 100. More importantly, I think, the upward thrust will continue under the banner of the Model 2000. This runs MS-DOS, so a lot of our software written or translated for the Sanyo should, with a bit of tweaking, work on the 2000. Also, I know Tandy themselves, and we here at Molimerx, have been very happy with the continued interest in Model I software. Although EACA in Hong Kong have ceased trading, I understand that the Genie Model III has been taken over by a German company and is shortly to be re-released as a machine somewhat similar to the Model 4. This will give added impetus to the Genie line. It seems to be an axiom of the microcomputer industry that when one door closes another opens. What seems to be happening in Model I world is that existing owners are selling or trading their machines when they go to new hardware. Thus is born an entirely new set of customers for Model I software and accessories. I suppose that machine will have to go eventually, but it is still reasonably strong and I would guess it will remain so for another three or four years.

We will not be issuing another listing before September, so if you can get the time to come to London, we look forward to seeing you on our stand.

SEPTEMBER 1984 LISTING

HYPERCROSS — INTERCHANGE BETWEEN TRS-80 AND CP/M/MS-DOS/PC-DOS

Hypercross is a file transfer program that will run, and therefore form a transportation path, from or to, the TRS-80 Models I, III and 4. It will, incidentally, also run on the Max-80 but there are very few of those machines in Europe. Hypercross will allow you to read and write files to or from a large number of machines running CP/M, MS-DOS or PC-DOS. It also has a number of added features. For instance, disks for alien machines can be formatted, the directory of them can be displayed and files can be killed. Hypercross uses your own DOS to read and write the TRS-80 disk, but it uses its own internal routines to access the alien disk. Consequently it has further advantages in that, to a large extent, it can manipulate any disks of densities and configurations which the user's present system is able to recognise. In other words (for example), if you have the hardware and DOS sufficient to cope with double sided TRS-80 disks, then you will be able to do so under Hypercross. Pretty well all of the well-known disk operating systems are supported by Hypercross. On the Model I and III, LDOS, Newdos 80 V.2, Multidos, the appropriate TRSDOS (including 2.7 in double density) and Dosplus, are all supported. Finally, on the Max-80, LDOS is supported. Obviously a double density hardware board is required on the Model I if you wish to access double density disks. Functions provided in the program include the following:-

DIR — read and display the directory of your TRS-80 disk. (Not allowed on some Model I DOSs.)

DIR — read and display the directory of an alien disk. Directory shows file size and EOF, plus file dates on IBM disks and user number on CP/M disks. Note that subdirectories of the type encountered in DOS 2.0 are not supported in this release.

KILL — delete a file on the TRS-80 or alien disk.

COPY — transfer a file from TRS-80 to alien disk or vice versa. Two modes are allowed. Image for an exact copy for binary files, and ASCII for transfer of text files. The exact end of file mark is preserved, and corrections are made for differences in ASCII formats such as end of line mark (carriage return/line feed).

FORMAT — format a blank disk in the alien format.

USER — CP/M only: set CP/M user number.

SELECT — select a new alien DOS format description. Useful for copying files from one non TRS-80 format to another.

HELP — display a summary list of commands.

EXIT — quit Hypercross and return to your TRS-80 DOS.

Formats are being added to Hypercross continually. Furthermore, we are able to add new formats more or less as required. In other words, if a customer has a particular machine from which he wishes to transfer data or to which he wishes to transfer data, we can probably arrange it. There are a couple of stipulations to this. First of all, so that we may preserve our sanity if nothing else, there would have to be a reasonable demand for the new format. The other point is that the person requesting the format must be able to supply us with a disk formatted under the DOS to or from which the transfer is to be made. For instance, Apricot and Sirius are not on the list. If anybody requires these formats to be added, we will be happy to arrange it, but they will have to supply us with a formatted disk. Furthermore, that formatted disk must be at least half full of data, preferably in ASCII. Such data, however, need not make any sense. Probably the easiest way to accomplish this would be to use a word processor to write out two or three files of ASCII.

In addition to the MS/PC-DOS formats mentioned there are, of course, many others which maintain compatibility with the IBM PC. Thus, for instance, the popular Sanyo 550 and 555 machines are supported because their disk formats are compatible with the IBM PC. There are so many compatibles that it would not be possible to list them all!

Subject to the foregoing. at the moment the formats supported are as follows:-

Computer/Type	Sides	Density	Tracks	Computer/Type	Sides	Density	Tracks
PC — M/S DOS formats (included on PC and XT versions):							
IBM PC DOS 1.1	SS	DD	40	DEC VT180 Robin	SS	DD	40
IBM PC DOS 1.1	DS	DD	40	DEC Rainbow	SS	DD	80
IBM PC DOS 2.0	SS	DD	40	Eagle	SS	DD	80
IBM PC DOS 2.0	DS	DD	40	Epson	DS	DD	40
Tandy Model 2000	DS	DD	80	Epson QX10	DS	DD	40
				Florida Graphics Beacon	DS	DD	80
CP/M formats (included on CP/M and XT versions):				HP 125	DS	DD	40
Aardvark	SS	DD	35	IBM PC CP/M-86	SS	DD	40
Access Matrix	SS	DD	40	Kaypro II	SS	DD	40
Access II	DS	DD	40	Kaypro 4 & 10	DS	DD	40
Altos	DS	DD	80	LNW-80 cp/m	SS	DD	40
ATR 8000	SS	DD	40	Lobo Max-80	SS	DD	40
CCS	SS	DD	35	Morrow Micro Decision	SS	DD	40
Cromemco	SS	SD	40	Morrow	DS	DD	40
Cromemco	SS	DD	40	NEC PC-8001	SS	DD	40
Cromemco	DS	DD	40	Osborne-1	SS	SD	40
Cromemco 4	DS	SD	40	Osborne-1/Executive	SS	DD	40

Computer/Type	Sides	Density	Tracks	Computer/Type	Sides	Density	Tracks
CP/M formats (cont.)							
Otrona	DS	DD	40	TRS80 4 CPM 3.0 plus	SS	DD	40
Sanyo 1	DS	DD	40	Xerox 820-II	SS	SD	40
Sanyo 2	SS	DD	80	Xerox 820-II	SS	DD	40
Sanyo 12	DS	DD	80	Xerox 820-II	DS	SD	40
SD Computers	SS	SD	40	Xerox 820-II	DS	DD	40
Superbrain	SS	DD	35	Zenith-Heath H89	SS	SD	40
Superbrain D	DS	DD	35	Zenith-Heath H89	SS	DD	40
Teletek System Master	SS	SD	35	Zenith-Heath H89	DS	DD	40
Teletek System Master	SS	DD	35	Zenith-Heath H89	DS	DD	80
Teletek System Master	DS	DD	35	Zenith-Heath Z90	SS	DD	40
Televideo 802	DS	DD	40	Zenith-Heath Z100	SS	DD	40
Televideo Q	DS	DD	80	Zenith-Heath Z100	DS	DD	40
TRS80 1 Lifeboat CPM 1.4	SS	SD	40	Zenith-Heath Z100 alt.	DS	DD	40
TRS80 1 Omicron Mapper	SS	SD	35	Zorba	DS	DD	40
TRS80 3 Holmes Vid 80	SS	DD	40	Zorba Z2000	DS	DD	40
TRS80 3 Hurricane Comp	SS	DD	40	Zorba Q	DS	DD	80
TRS80 3 MM Shuffle Brd	SS	DD	40	Zorba Z2000Q	DS	DD	80
TRS80 4 Montezuma 2.2	SS	DD	40	8 inch CP/M standard	SS	SD	77
TRS80 4 Montezuma 2.2	DS	DD	40				
TRS80 4 Montezuma 2.2 (1.42 up)	SS	DD	40				
TRS80 4 Montezuma 2.2 (1.42 up)	DS	DD	40				

HYPERZAP — MUCH MORE THAN A ZAPPING PROGRAM

Hyperzap is not, as its name might imply, simply a zapping program. To some extent it will be frowned upon by some people because one of its features allows almost any protected disk to be copied. Indeed, an indication of the quality of the program is that it is one of the few utilities that will copy the most cleverly protected disk around, namely Super Utility Plus (for obvious reasons the latest editions of SU + are not supported). This ability to make back-ups of protected media is a by-product of the principal aim of the program, which is to (for the first time) bring to the average user the capacity to make his own non-standard disks. With Hyperzap you will be able to make a self-booting protected disk upon which you can place your own programs. As Hyperzap will run on the Model I, III or 4, pretty well the only stipulation about the program which you wish to put on to the self-booting disk is that it will load and run from 5400H.

Hyperzap, therefore, is an extremely powerful TRS-80 disk utility which allows the user to create, modify or backup part or all of almost any floppy disk. As a general rule you may take it that Hyperzap will work on any disk which your hardware has the capability of reading, even if such disks have mixed densities on one track (again we emphasize that the hardware must be capable, thus — on a Model I — a double density board must be present in order to manipulate either a mixed density or a double density disk). Hyperzap will also access many non TRS-80 disks. It works at the track and sector level and therefore does not care how the information is encoded within the sectors. Hyperzap is resident in memory and hence does not use the resident DOS; 48K of memory is required. On Model I systems Hyperzap automatically detects the type of doubler in use, if any. It is compatible with all known doublers except those with 8" capability, such as the LNW 5/8 and Holmes DDSD1.

One of the more exciting features of Hyperzap is Autopilot. This is a routine which will read, record and save sets of keystrokes in a buffer so that they may be acted upon at a later date. For instance, when the user is investigating a disk then often he will be working on the same type of format. In order to do this, he will have to input a number of the same keystrokes a number of different times in order to get to a given point in his procedure. All that it is necessary to do, in such circumstances, is to activate Autopilot. The keystrokes will then be saved to a file and accessed automatically at a later date. Hyperzap comes with a number of Autopilot files already compiled for you. For instance, one enables the user to make a backup copy of Hyperzap itself. Another enables the user to make an automatic backup copy of Super Utility Plus 2.2. In a similar way to the addition of new formats in Hypercross, so new Autopilot files will be released from time to time.

To understand the truly amazing power and versatility of Hyperzap it is necessary to have some basic understanding of how it works. Normal zapping programs, although working at the track and sector level, firstly usually only work with data, and secondly work to a large extent only on the disk itself. Quite often such programs have no need to know how a track and sector is made up, so long as they can access it, then they make various assessments about its makeup. Hyperzap, on the other hand, at all times totally analyses all of the track including non-data hidden ID marks, DAM's and so on. Indeed, you cannot get anywhere with Hyperzap until you have designated the track that you wish to look at and Hyperzap has done its analysis of that track. The coding of Hyperzap, however, is so efficient that all of this literally occurs in under a second. For instance, if you issue the command D followed by a track number then Hyperzap will show you a screen somewhat similar to Figure 1.

```
Screen 2:      £   Tk Sp Sc Ln CRC DM Data Ang.  TYP CRC Den
 Physical   >  01  00 00 00 01 Y   FB 8C00 0036   IBM Y   S
 track 00      02  00 00 0C 01 Y   FB 9500 0748   IBM Y   D
  Sector       03  00 00 01 01 Y   FB 8D00 1083   IBM Y   D
  Table        04  00 00 07 01 Y   FB 9600 1418   IBM Y   D
               05  00 00 0D 01 Y   FB 8E00 1753   IBM Y   D
 Total 17      06  00 00 02 01 Y   FB 9700 2088   IBM Y   D
 sectors       07  00 00 08 01 Y   FB 8F00 2427   IBM Y   D
               08  00 00 0E 01 Y   FB 9800 2757   IBM Y   D
 Drive 00      09  00 00 03 01 Y   FB 9000 3095   IBM Y   D
 05 inch.      10  00 00 09 01 Y   FB 9900 3426   IBM Y   D
               11  00 00 0F 01 Y   FB 9100 3763   IBM Y   D

A Append sector   R Read sector    E Edit entry      C copy to next
D Delete sector   M modify data    G Gen whole trk           track
I Insert sector   Z Write sector   T set all Tks     Clear ---> exit
```

Figure 1

Although we do not wish to go into too many technicalities in this sales literature, it will give you an idea of the capabilities of Hyperzap if we quickly go through the columns in Figure 1. The first column of data is merely a consecutive numbering of the sectors so that reference may be made to them. The number shown has no significance whatsoever to the actual number of the sector. The next column contains the track number (in the example track zero is being accessed). This is the number given in the Address Mark of the track. On some non-standard disks this may not be the physical track number. The next column entitled "Sp" is of little interest usually. It is a spare byte contained in the Address Mark on the track, but it is sometimes used to indicate the side, on two sided disks. "Sc" is the

logical sector number, again contained in the Address Mark. On some protected disks, that may be almost any number! The column "Ln" contains the coding representing the length of the sector, in other words the number of bytes in it. "CRC" (Cyclic Redundancy Check) is a checksum. A Y or an N will indicate whether the checksum written on the disk is correct or not. Again, an incorrect checksum is often used to protect a disk. "DM" stands for Data Address Mark, and is used by the disk controller. The "Data" column contains the address in memory to which the sector data has been copied. It is to that address, of course, that you turn when you come to either inspect or modify the data. The next column "Ang" is a decimal number representing the angular position around the disk of the start of the sector address mark. As a matter of fact, each unit represents one byte around the disk in double density. Displacement is, of course, measured from the index hole, zero being the start and 6250 being one full revolution. A simple equation converts this number into degrees. In this clever way Hyperzap is made completely independent of the track and sector numbering actually contained in the Address Mark of the disk. The "TYP" column contains a code showing the type of sector used. The next column is similar to the first "CRC" column, but has a different function. The final column specifies the density of the sector. The illustration shows that the particular track under examination has mixed densities in the sectors, in that the first is Single and the remainder Double density. This, incidentally, is frequently used nowadays to make a disk compatible with both the Model I and the Model III.
When the information supplied by Figure 1 is linked with the contents of the sector, which are available at the memory address indicated, it will be seen that the user, simply with these two tools, has almost complete control over the disk — particularly when it is understood that any data can be written back to the disk after modification.
Space does not permit us to continue describing the many features of Hyperzap that we have not even yet touched upon. The following is a very abbreviated list of, perhaps, the principal features:-

v — Works in single, double and mixed densities.
— Double sided and 80 track drives supported.
— Powerful backup of most disks.
— Autopilot feature allows storing and re-use of automatic copying sequences, much like writing and saving a program. Hyperzap is supplied with working auto-sequences for self copy and duplication of well-known hard to copy disks such as Super Utility and some game disks.
— Turn your own assembly language programs into self-booting dual loading Model I/III/4 disks automatically.
— Analyse a track to determine the format.
— Read/write track sectors — any format, not just Radio Shack standard 256 byte.
— Read or format a whole track.
— Build a descriptive directory of each track's statistics.
— Create completely new types of disk format.
— Screen edit memory, sector and track data in Hex or ASCII.
— Read/write to any Port.
— Move memory, fill memory, search memory, compare memory zones, calculate CRCs.
— Jump to memory to start executing a program.
— Manually step your drives — useful for drive checkout.
— Support for 8" drives on Model III and 4. (Requires Holmes or Micro-Mainframe controllers on the Model III or 4.)
— Works well even with only one disk drive. Optimized to reduce the number of disk swaps needed.

So far as 80 track drives are concerned, as stated above they are supported by the program, but many people owning 80 track drives do not own a 40 track drive with which to boot Hyperzap. Such customers may, if they wish, take advantage of our 80 tracking service. This is £5.00 plus VAT, and includes the cost of the higher quality disk.
To finish our description of Hyperzap, we would like to return to the place where we started. Namely, to re-emphasize that if one is going to write or publish a program which has as its chief purpose the ability to manufacture disks of unusual format, then inherently it will have the ability to read disks of unusual format and to copy them. This ability in Hyperzap must only be used to make legal copies. That is to say, copies of software which the user owns and which are for his own use. It is an offence against the Copyright Act to duplicate any software for third party use, whether a charge is made for that software or not.
Hyperzap is one of those paradoxical programs that is extremely complex in its coding and functions, but is not all that difficult to use in actual application. Hence, it is difficult to suggest the degree of skill that is needed. The manual runs to some 35-odd pages, so everything is covered. Probably it is fair to say that a certain degree of knowledge of disk usage is required.

BACKREST — A NEW VERSION

There is a new version of Backrest, 1.3, which includes a new facility so that individual files may be copied back to the hard drive from the backup floppy disks. It will be recalled that Backrest achieves its high speed by track and sector rather than by files. This is, of course, maintained. The new feature means that the user can have the best of both worlds when he is restoring to the hard drive.

TRS-80 COLOUR COMPUTER

The advent a few months ago of the 64K Colour Computer, plus the recent price reduction, has given this Tandy machine a new lease of life. We are, therefore, introducing several new programs over the next few months starting with the following.

C.C.THREE — A TREMENDOUS DEAL

We had a whale of a sale recently, and now here is a whale of a deal! Three programs are included in this Colour Computer package. The first is a spreadsheet — in other words, a VisiCalc-like program. The second is a word processor, and the third is a database program. In that the second two only require 16K extended Basic and the spreadsheet only needs 32K, they will all run on the "older" version of the CoCo. The other side of the coin, however, is that being restricted in size they are automatically restricted, to some extent, on features. We will deal with the three separately.

C.C.Calc: This is a spreadsheet consisting of a maximum of twenty-six rows and twenty-six columns. The resulting grid, of course, is 676 cells. As in the normal spreadsheet, rows and columns are identified with letters and numbers. Thus, each cell has a unique address. Three columns and thirteen rows will fit on the CoCo screen at any one time. Thus, again as is normal with a spreadsheet, the screen forms a window on to the main sheet. Values, formulae or labels may be entered into the cells. Values in the case of the CoCo represent a nine position number. They will be entered directly by the operator, or as the result of a formula calculation by the machine. The formula is a series of numbers and/or cell addresses separated by arithmetical operators. The arithmetic functions permitted in this spreadsheet are addition, subtraction, multiplication, division and exponentiation. Two number operators are permitted. The percentage sign is used to denote an integer or whole number, the hash sign to indicate that an absolute value of the calculation is required. Each column in the sheet is ten positions wide, but labels may overflow through to an adjacent cell. C.C.Calc supports both Save and Load so that files may be re-worked.
C.C.Calc makes no pretentions at being as feature-full as more expensive spreadsheets, but it is an extremely useful program for those who wish to use a spreadsheet in a simple manner.

C.C.Writer: Although C.C.Writer is, strictly, compatible with 16K machines, there is no doubt that its usage is enhanced with 32K. We do not have any exact figures but it is doubtful whether the word processor could be used for much more than a page of text in 16K. Rather like the features of a spreadsheet, features of a word processor are well-known. We already stock many of them and it therefore becomes somewhat repetitious to continue repeating what a word processor does. C.C.Writer is best described as a mid-range processor. It has most of the features that one would expect, including right margin justification, double spacing, adjustable left and right margins, paragraph indentation, page length adjustment, interpage pause for insertion of separate sheets, headers and so on. C.C.Writer is particularly easy to use in that, somewhat unusually for a word processor, it is menu driven. The menu is as follows: —

```
                C. C. WRITER
          ============================

T - TYPE          F - FORMAT PAGE
I - INSERT        D - DELETE
E - EDIT          G - GLOBAL EDIT
S - SAVE          L - LOAD
M - MOVE          P - PRINT
B - BACKUP        Q - QUIT

              YOUR CHOICE?
          ============================
          19,000 SPACES LEFT IN BUFFER
```

As you will see, the menu is quite comprehensive and it does save the operator remembering a lot of commands, because when most of the menu selections are chosen one goes into a submenu, such as the following page control menu which will be displayed if the main menu selection F were made: –

```
                PAGE CONTROLS
          ============================
PAUSE (0=OFF,1=ON) = 1
EJECT (0=OFF,1=ON) = 1
JUSTIFY (0=OFF,1=ON) = 0
DBL SPACE (0=OFF,1=ON) = 0
LINE #'S (0=OFF,1=ON) = 0
LEFT MARGIN AT 10
LINE LENGTH 60
/p INDENT OF 0
PAGE LENGTH IN LINES = 66
PRINT LINES/PAGE = 56
FIRST LINE ON 4
PAGE # IS 0
HEADER =
```

C.C.Writer, of course, supports the Saving and Loading of text. C.C.Writer is, as we have said, a good mid-range processor.

C.C.Files: Like the preceding programs in this package, it would be rather repetitive if all of the functions are described item by item. It is like the word processor – a good mid-range Database Management package. The most important aspect of a database is its statistics. As received, C.C.File is configured (for 16K) to handle about 200 records of an average of 100 characters each. The maximum record size is 240 characters but, of course, if this is used then the number of records will be drastically reduced. The manual contains short introductions on how to change the average record length. The normal load and save features are available, and the same remark can really be applied to the other features of the program. Restricted Control Code facilities are available, as are normal Insertion, Change and Deletion. Editing obviously is supported. Search and selection is by key word, which is a useful feature in this type of database. In other words, it is not necessary to allocate a key to every record before it can be selected.

C.C.Three comes complete with a three-ring binder manual the contents of which seems to us to be perfectly adequate. It is also supplied with two cassettes, one containing the tape versions of the three programs and the other the disk versions.

SUPER STATS – A STATISTICAL PROGRAM FOR THE COCO

This program will operate in 16K with extended Basic and represents an extensive interactive statistics program. It is designed to make available most of the commonly used statistics procedures in a single easy-to-use package tailored specifically to the capabilities of the Colour Computer. Its features include:-

- Descriptive statistics – mean, standard deviation and standard error of mean, correlation and covariance.
- Simple and multiple linear regression. Basic analysis of variance tables and F and t-tests are produced, and forecasts of future values based on the regression relation can be made.
- Extensive data manipulation and editing capabilities, including variable transformations.
- Output reports are formatted to display one screenful of information at a time. No lunging for the shift@ key to prevent information scrolling off the screen. Optionally, output can be formatted for and output to a printer.
- Procedures are called with simple four letter commands.
- User specified dimensioning of data arrays allows optimal use of your machine's configuration.

The program comes complete with a thirty page A5 size manual, which seems to be sufficiently comprehensive.

PAGE PLUS – MEMORY MANAGEMENT

This unique program carries out the memory management necessary so that it is possible for Basic programs to utilise the two 32K banks of memory, thus permitting, in a 64K machine, up to 56K available space for a Basic program. It does this by allowing the user to use both 32K RAM pages from Basic, storing up to half the program on the second page. When this part of the program is needed the program simply makes a USR call. The computer will swap the two halves of the program and continue operation. Programs may be swapped as aften as you wish, and the user is not restricted to having half of the program on each page. The only real restriction to the utility is that the part of the program that does the switching must be in exactly the same place in RAM on both pages. The instructions explain this, however, and a demonstration program is included to clarify further.

MDISK – A DISK DRIVE IN MEMORY

There are now many programs that will create a quasi or virtual disk drive in memory, but usually they are associated with machines that have already got one disk drive (e.g. Memdisk). MDISK will give you a virtual disk drive whether you have an existing drive or not. All you need is 64K of memory, for MDISK puts the "hidden" 32K to work for you as a virtual disk, with the capability to save and load up to fifteen programs, view the directory and files, and kill unwanted files. Basic or machine language may be executed directly from the virtual drive. To re-emphasize, MDISK will work on disk or tape based 64K systems.

ROMBACK – BACKUP THOSE ROM-PAKS

There is not too much to say about this program. It is a utility to allow 64K CoCo owners to produce working tape copies of Rom-Paks. In other words, program cartridges. It does this by block moving the data from the Pak to RAM and then tacking on a special loader program. The CoCo now is very popular. Consequently, we cannot guarantee that this utility will backup every Rom-Pak in existence. All of the ones that we have tried it with, however, are fine. There is no hardware modification involved. The only thing of this nature that the user has to do is to stick a bit of tape over one of the traces on the Rom-Pak. A few of the Rom-Paks on the market have special code in them to prevent backup. The various Pokes that are needed to be installed before a working copy of some protected Rom-Paks can be made are included in the documentation. This program is published by Skyline Software in the United States, and they tell us that additional Poke information will be forthcoming from time to time. This utility must only be used to make copies of your own software for your own use. It is an offence against the Copyright Act to duplicate any software for third party use, whether a charge is made for that software or not.

SIMPLEX – LINEAR PROGRAMMING

Linear programming is discussed in our usual rather vague way in another part of the Catalogue under the description of the Porta Max program. Readers are referred thereto for information on linear programming. Apart from that, our best course is to quote the following blurb from the start of the manual. Simplex is compatible with a 16K and up CoCo.

"Simplex is a linear programming package for the Radio Shack Colour Computer. It is designed for students and teachers of operations research in business and engineering curriculae and for professionals requiring this decision-making tool. With it you can enter a linear programming model in any form, edit the model, solve it, perform post-optimality analyses, and list the model and solution reports on the screen or a printer. Models can also be saved to tape or disk and later retrieved for further analyses. These features give you many of the capabilities of mainframe linear programming systems at low cost. The minimum system requirements are 16K memory and Extended Colour Basic. Otherwise the program is hardware and operating system independent. Printer and disk drives are optional. Both the program and this documentation assume some familiarity with the use and terminology of linear programming."

Christmas 1984 Listing

MOON ROVER – AN ARCADE GAME FOR CHRISTMAS

This is another arcade game from MichTron, who used to be called Computer Shack and who, over the last few years, have built up an enviable reputation for such games. Their authors seem intent upon disproving the statement that Model I/III graphics are hopeless! Most arcade games for the non-colour Tandy or Genie machines really reduce themselves down to three of four different categories. The first, of course, was invaders where one commands a laser base or whatever at the bottom of the screen and shoots up at invaders coming down from the top. The next arcade pioneer was, perhaps, Defend which we published three or four years ago. In this the action is lateral; the space ship over which one has command is flying in a horizontal direction although, of course, it can be moved up and down as well. Moon Rover fits within this latter category. The player travels over a rugged and rough mountainous terrain, complete with erupting volcanoes (on the moon?), gaping craters and to succeeed you have to fight with everything you have got. There are five different sectors of alien obstacles before you have a chance of reaching the earth outpost. In each new sector you will find more problems, in addition to new terrain. You can, of course, control the Rover forward and backward, but it can also jump. As weapons you have Particle Beams and the Ultra Bomb. You have only got room for one of these latter, but when detonated it destroys all enemy ships. It must be kept as a last resort. There are many enemies to battle with, and you will have to contend with a number of alien weapons. One such weapon is a Gate. If a Gate dropper ship drops its Gate in front of you. you have got problems. Sound of course, is supported.

CLASH – WINGED HORSES NO LESS!

It is hard to think of how to describe this one. It is an arcade game and it is very good. Indeed, the graphics for a TRS-80 are in many respects quite amazing. An indication of its quality is that it is written by Bill Dunlevy who wrote Assault, Jovian and the ever popular Cyborg. I suppose Dunlevy got the idea from the old English jousts, but the theory changed a lot in the execution! As a matter of fact, there is some doubt as to whether the steed is a winged stallion or a dragon. Either way, the wings flap quite realistically. When you add that to bucking horses, you can see that the game is full of action. The sales blurb from Computer Shack who originally published the program says that the riders will need "skill and fast reactions", and there is little doubt that they are absolutely correct. The characters, apart from two possible players, are vultures, cave spiders, dark bats and spikes of death. The rewards are Gems which have various points values depending upon whether they have been stopped, rolling or gliding. The players, that is to say the winged horses, are advised to hit the enemies from above, but spiders and bats kill from the sides and death spikes do almost anything. The game has nine different playing fields and five distinct wave types. Each one is really a game in itself, but all maintain the theory of the Clash of the joust – very good fun, especially at Christmas.

ASSEMBLER 100 – FOR THE MODEL 100

This program should probably be entitled Editor/Assembler as that is the more common name for an assembler because traditionally TRS-80 authors have included an editor in the package. In the case of the Model 100, of course, this is not necessary because the built-in software Text performs this function. Assember 100, therefore, is a straight-forward assember which takes as its source code a file written under Text. The format of this file is standard, using four fields; namely an optional label. the operator field, one or two operands, and finally an optional comment field. One feature of Assembler 100 is that it does not require line numbers. The original Tandy editor assember called for line numbers, so they in turn have become somewhat traditional. Many other assemblers do not use them however and Assember 100 is one. All of the documented 8085 opcodes are supported, using Z80 mnemonics, plus RIM and SIM. Numeric values may be entered in decimal, binary or hexadecimal. Upper case is required in the source file except in the comment field. Twenty labels are supported as the program is supplied, but if more are required the DIM statement in the program can be changed but with a subsequent reduction in program size. This statement infers that the program is written in Basic, which is absolutely correct. It is, therefore, not the fastest assember in the west! A number of normal pseudo ops are supported namely ORG, EQU, DEFB, DEFW, DEFM, and DEFS. The dollar sign is, as usual, used for the current program counter value. During assembly the current address being worked on is displayed on the screen in decimal. The source code is, of course, checked for errors and if one is found the line is displayed together with an appropriate error message. In addition to the assembler itself, a demonstration program is supplied in source code. The purpose of this is to show the format of the source code files, and generally to show how the assembler works.

MODEL 4 TECHNICAL MANUAL

Ever since the Model 4 came out we have been stocking Roy Soltoff's Technical Manual on TRSDOS 6. The Tandy Technical Manual, however, is now available and it has three advantages over Roy's. First of all it is cheaper. Secondly, it has details of hardware as well and software. Finally it is, of course, the definitive version. A couple of months ago therefore, we switched over to the Tandy Manual in place of Soltoff's. Obviously, it contains all of the SVC calls which are perhaps the most important part of such a software Manual.

CCALC — ANOTHER SPREADSHEET FOR THE MODEL 100

This spreadsheet is written by Mr. T.J. Bourne, who wrote what is rapidly becoming a standard, namely the Pascal 6.x compiler. He also wrote CSTAR. Both of these programs, the latter for the Model 100, are described elsewhere in this Catalogue. We make this point because the other spreadsheet that we have stocked for the Model 100 is imported. The fact that one is British written and the other U.S. written is one of the reasons why we are offering another spreadsheet. The other reason is that there are some differences between the two products. The chief differences between CCALC and PortaCalc are:-

1. CCALC is slightly slower on some operations.
2. CCALC offers editing facilities for changing spreadsheet entries.
3. CCALC allows one or more rows or columns to be used as headings and, therefore, not scrolled off the screen.
4. CCALC allows full expressions, including the use of parentheses.
5. The print facility of CCALC always prints the whole spreadsheet.
6. CCALC uses letters for columns and numbers for rows, which is somewhat more traditional than PortaCalc which uses letters for both rows and columns.
7. CCALC allows a spreadsheet to be saved as a RAM file. To save to cassette this must then be saved using the TEXT built-in software.
8. CCALC does not offer any interface with other spreadsheet software, although the manual does include a definition of the file format.
9. Last but perhaps not least CCALC, as it is not subject to the pound/dollar fluctuations, is considerably less in price than PortaCalc.

Apart from the above differences, these is not an awful lot that one can say about a spreadsheet that has not already been said many times over. The first, of course, was VisiCalc. Nowadays there are literally hundreds of them. Some, particularly on the 16 bit machines, are extremely complex. It is probably fair to say that both CCALC and PortaCalc make the best of what is available in the Model 100.
The program itself occupies just under 9K bytes. During execution another 7K or so is needed. The Model 100 used must have 24K or more of RAM available. CCALC supports 400 cells in a 20 row and 20 column format.

TWO GAMES — FOR THE MODEL 100

These two games are supplied on one tape as a package. They have been written and chosen as games which may well be of interest to the traveller using his Model 100 as company. The first one is Cribbage or Crib. So far as we know it follows the standard Cribbage rules. It uses a normal fifty-two card pack. As customers who can already play Crib will know, it is to a large extent a game of strategy. This computer version can, therefore, be used to while away many an otherwise boring hour. The point we are trying to make is that this particular part of the games duo on this tape is provided for the more thoughtful amongst us. The second is more of a fun thing and is called Nudger. It is a fruit machine simulation. Unlike many of the early versions of such programs, however, it has the two features of being able to nudge and hold. For those not familiar with fruit machines, the ability to nudge means that if the three drums have come to a halt the player is occasionally permitted to move one or more of the drums up or down for a limited number of goes. The Hold function is self-descriptive and means that the player can spin one or more drums whilst holding one of more of the remainder. As the Model 100 is unable to deliver its reward via coins, the successful player will find that he gets additional tries instead.
These two games are very different. As we have said Crib is for strategy, Nudger for fun.

MODEL 100 ROMS

Just as occurred five or six years ago with Model I ROMs, so at the moment we are in a transient period of Model 100 ROMs. As most customers know, new ROMs were issued and replaced free by Tandy a few weeks ago. There is no way of getting round the computability problem until the new ones become more widely used, except to say that if Model 100 users have any difficulty with any of our programs they probably have new ROMs, and we will have to supply them with a different version. In about six months or so, when the balance of new versus old becomes greater we will switch over to the new, and then old ROM users will have a problem!

ACCESS — MULTIPLE DRIVE SIMULATION

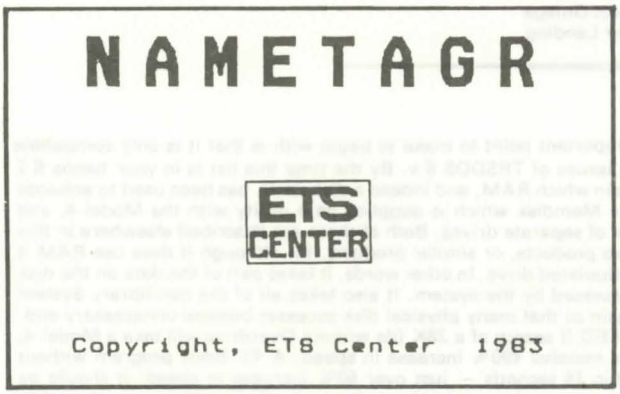
To some extent Access has similarities with DiskDisk which is described elsewhere in this Catalogue and, it will be recalled, allows the user to simulate a logical floppy disk drive by means of a disk file on a physical drive. That program was aimed at a number of different applications. In particular it is very useful for partitioning large disk volumes, such as hard drives, into smaller regions, thus effectively overcoming the limitation of 256 directory entries per disk. Access, however, is primarily intended for users with a single disk drive, although it may have minor applications for customers with two or more drives. It is compatible only with LDOS and its function is to simulate the advantages of having multiple disk drives in a single drive system. In that it is almost entirely dedicated to this application, it is far more simple to use than other somewhat similar programs, particularly as it carries out its task by setting up a filter in high memory. The system is thereby "fooled" into believing that it has two or more disk drives instead of the one physical drive that it actually has. The user is prompted to swap disks whenever the system requires the use of the other disk. In this way, one of the main inherent deficiencies of LDOS for single drive owners, namely the inability to make anything but mirror image backups, is circumvented. Access permits Backup Reconstructs and by Class with only a single drive. The old system of copying single density disks to double density disks, therefore, — or for that matter vice versa — by way of individual use of the COPY command is no longer required. System disks can now be copied cross density as well. In the past this has inevitably meant that the user must borrow another drive, since COPY does not allow the copying of SYS files. As a general statement, Access is also useful with any program that normally requires two or more drives, in a single drive system. However, as obviously neither the author nor ourselves have any control over applications programs which have a requirement for two or more drives, we cannot be sure that Access will work with all. Furthermore, sometimes so many disk swaps will be required by the applications program that the whole task becomes self-defeating. A further problem with applications programs is that Access uses the LDOS built-in disk driver. It will not operate correctly with any program that uses its own disk driver. Access should prove to be a boon to the single drive LDOS owner. The authors of LDOS have always prided themselves on the fact that, in so far as it is possible to provide convenience to a single drive owner, LDOS does it. Access certainly takes that proud boast quite a way further.

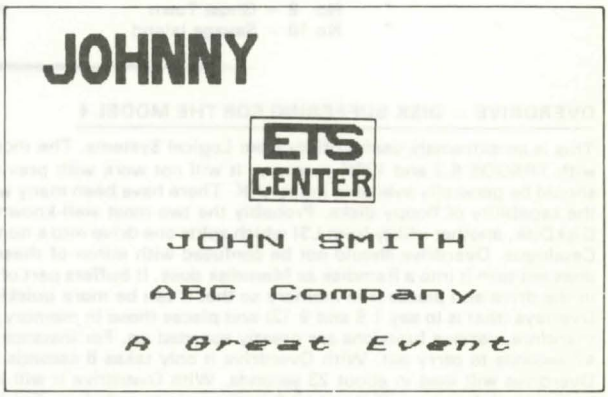
SOME NOTES ON MONTEZUMA MICRO CP/M

The newest version of this CP/M contains a complete re-write of various parts of the software, specifically the popular interchange module. As a matter of fact this is something of a double-edged sword, because although the range of formats has been increased, this has necessitated the inclusion of some rather complex procedures. In other words, Intercharge is now not quite as easy to use as it used to be. The Tandy CP/M 3 format has been added. Consequently, programs that Tandy produce for their CP/M can now at least be transported to the Montezuma CP/M, although Hypercross, described elsewhere in the Catalogue, has been able to do this for some time. A lot of customers often confuse transportablility with compatability but just for fun we tried the Tandy CBASIC, took it across to the Montezuma CP/M and used it. It seemed to work faultlessly, Although we sell Tandy applications programs, basically it is for Tandy to support them; so it follows that we cannot give any guarantees. However, we used CBASIC on the Montezuma CP/M for quite a while and were unable to fault it. Whether this is going to apply to other Tandy applications software written for their CP/M, we do not know.

NAMETAGER – NAME TAG MAKER

In case you do not know what a name tag is, it is one of those funny pieces of paper or cardboard that goes inside a plastic badge affair, which we all have to religiously wear at exhibitions and similar functions. It usually contains the owner's name and the name of his company and is supposed to make it easier for somebody talking to the owner. In fact, it makes them squint and they usually use the wrong name anyway! Such name tags are generally printed at great expense. However, quite often exhibitions, fetes, conferences and other assemblies do not attract sufficient people to make it worthwhile printing. In that case this program is a perfect substitute. It is written, incidentally, by the same people who wrote Labelmaker described elsewhere in this Catalogue. It comes complete with a number of plastic holders which, of course, have a safety pin type of attachment on the back, plus a quantity of fan folded card stock. The sides of this stock are punched so that it will fit a printer. The printer must have moveable sprockets. When we started to market Labelmaker, and for that matter still at this time, we got into a lot of trouble because we elected not to supply the cassette and other labels but preferred to recommend a paper house. As we understand, that entity decided that they would discontinue the line, hence our trouble. In the case of Nametager we have laid on sources of supply in the U.K. and just so long as they supply us we will continue to sell supplies for this program, subject only to one stipulation. The program can be used to print rather large but otherwise normal sticky labels. We will not be supplying those. To clarify, the program comes with a supply of cards and plastic holders. We will also be selling these later as required, as refills for the program. Nametager can also be used to make place cards (table tents) and other attention-getting notices. These are actually made by doubling up on the size of a name tag. Four name tag cards, in other words, are used for one notice. Some examples of tags are shown below **reduced in size.**





Nametager is compatible with all Epson printers of which we are aware, including the early ones without Graftrax Plus and the Gemini 10 and Prowriter or NEC printers. It is also compatible with all major DOSs, although some ancillary features will not be available. Finally, on the subject of compatibility, there are two different versions for Model I and Model III, and you must define when ordering which you want. This is one of those more unusual programs which will not CONVERT successfully.

Nametager provides a selection of eight pre-defined name tag formats. A utility in the program enables these to be reviewed, accessed and changed. If a format has been changed it can be saved back to disk for future use. In addition to the formatting, Nametager comes with a utility which enables the user to generate customized logos. It would not be correct to say that any logo can be created, but certainly a great deal of versatility is provided by the utility. In summary, Nametager is a useful program which at first sight appears to be fairly specialized. In fact, when one bears in mind that table tents or place cards can also be made, it comes in useful for home entertainment as well. Although it is of little or no interest to our Tandy customer, Nametager is also available for the IBM PC computer.

LS UTILITY DISK – UTILITIES FOR THE MODEL 4

Described elsewhere in this Catalogue are several utility disks. One of them is from LSI for the LDOS 5.1.x series. The LS UTILITY Disk is a similar offering but for TRSDOS 6.x. Tandy also do a Utility Disk for TRSDOS 6.2. The LSI and the Tandy products should not be confused. They are totally independent and so far as we know do not overlap in either features or functions. LS UTILITY Disk consists of the following:-

CALC/FLT	This keyboard filter allows hexadecimal/decimal/binary conversion and includes hexadecimal add and subtract.
KSMPLUS/FLT	Provides pre-defined key ''macros'' like KSM, and includes additional features like: re-define keys ''on-the-fly'' directly from the keyboard, repeat last DOS command, send a Top-of-Form to the printer, return the system date or time and define the shifted and unshifted function keys.
MAXLATE/FLT	A complete character translation table may be built for input, output, or both. Any given character may be trapped or translated to any other character or group of characters, on any device.
PRCODES/FLT	For printers that will backspace, provides slashed zeros and allows easy control of boldface and underlining.
TRAP/FLT	Allows any given character to be ''trapped'' and thrown away. This filter may be used for input, output, or both on any device.
RDTEST/CMD	Performs a non-destructive read verify of any given drive.
READ40/CMD	Will read a forty track disk in an eighty track (96 tpi) drive for BACKUP, CONVerting and other read only operations.
TYPEIN/CMD	Allows many programs that normally cannot be run from JCL to be controlled automatically.

RADIONICS

For the past month or so we have had three or four rather odd telephone calls from people saying that they represent a company called Radionics Ltd. These people tell us that they are about to introduce a Tandy Model I compatible machine, and requesting permission to insert a statement (presumably in the manual for such machine) that our software will run thereon. We have replied, as is normal in the industry, that if they would like to supply some hardware upon which we can test our software, we will be happy to support it.

They have not acceded to this request, and consequently we would like to make it clear that so far as we know no Molimerx software is compatible with whatever microcomputer this company is producing, and that in any event we are **not** supporting such machine.

SALE! SALE! SALE!

ADVENTURE INTERNATIONAL

Older customers will know that for many years we stocked the programs of Adventure International, the company set up by Scott Adams when he wrote the first 16K Adventure series. For reasons into which we need not go, we severed relations with them a couple of years ago. We were left with a considerable amount of stock which over that period we have gradually dispersed. We now, however, have small quantities of the following programs which we are clearing out as a Christmas sale. They are all tape, and they are all £5.00 apiece plus VAT for a total of £5.75. Obviously we have more of some titles than others. So, please indicate whether we can substitute if we are out of the title you choose.

Adventure No. 2 — Pirate Adventure
" No. 4 — Voodoo Castle
" No. 5 — The Count
" No. 6 — Strange Odyssey
" No. 7 — Fun House
" No. 8 — Pyramid of Doom
" No. 9 — Ghost Town
" No.10 — Savage Island
Adventure No.11 — Savage Island Part 2
" No.12 — Golden Voyage
Showdown
Galactic Empire
Galactic Trader
Galactic Revolution
Project Omega
Lunar Landing

OVERDRIVE — DISK BUFFERING FOR THE MODEL 4

This is an extremely useful utility from Logical Systems. The most important point to make to begin with is that it is only compatible with TRSDOS 6.2 and 128K memory. It will not work with previous issues of TRSDOS 6.x. By the time this list is in your hands 6.2 should be generally available in the U.K. There have been many ways in which RAM, and indeed a disk itself, has been used to enhance the capability of floppy disks. Probably the two most well-known are Memdisk which is supplied as a utility with the Model 4, and DiskDisk, another utility from LSI which splits one drive into a number of separate drives. Both of these are described elsewhere in this Catalogue. Overdrive should not be confused with either of these two products, or similar products, for although it does use RAM it does not turn it into a Ramdisk as Memdisk does. It buffers part of a stipulated drive. In other words, it takes part of the data on the disk in the drive and places it in memory so that it can be more quickly accessed by the system. It also takes all of the non-library System Overlays (that is to say 1-5 and 9-12) and places those in memory, again so that many physical disk accesses become unnecessary and, therefore, various functions are greatly speeded up. For instance, a FED II search of a 28K file without Overdrive will take a Model 4, 47 seconds to carry out. With Overdrive it only takes 8 seconds — a massive 490% increase in speed. A 4K Basic program without Overdrive will load in about 23 seconds. With Overdrive it will load in 15 seconds — just over 50% increase in speed. It should be understood, however, that not all functions are speeded up. For istance, as we have said above, it is only the non-library overlays that are loaded into memory. Consequently, any library calls such as DIR will still have to go to the disk and there will be no increase in speed. Indeed, the instructions state that some operations can be slowed down, although we have never noticed this when using Overdrive. Overdrive requires one free bank of the Model 4's alternate memory. 16K is used for the drive buffer and 16K for the System Overlays. The program only uses about 400 bytes in low memory for itself. These figures mean that functions such as SPOOL, DISKDISK, MEMDISK, and so on, may be used at the same time as Overdrive. It may be of assistance to customers to know the brief mechanics of Overdrive. Up to two drives may be buffered. When a disk read is requested from a buffered drive, the entire track is read into banked memory. Additional read requests for that track will transfer the data from memory, thus eliminating the physical disk access. When a System Overlay is needed, the machine will go to the alternate memory to get it rather than to the drive, again eliminating the physical disk access.

MODEM 80 — NOW FOR THE MODEL 4

The Model 4 version of Modem 80 is now available. This is an entirely new program with fresh manual. Modem 80 is fully described elsewhere in the Catalogue.

TELEPHONE SUPPORT

The microcomputer market changes continuously, and one of the changes over the last year or so has been a tendency towards lesser experienced users purchasing machines. Six years ago people were so intrigued by microcomputers that they knew as much about them as the vendors and the authors! Now, the tendency is towards buying microcomputers rather as one buys a stereo.

This change must bring a change in the policies of software houses. Some, such as Powersoft in the United States for instance, and many U.K. houses, will not answer any queries on the telephone. We have no intention of going that far, but we are having to clamp down on the complexity of information that we can give on the telephone. This is motivated chiefly for the good of the customer — although he probably does not think so at the time! In a recent survey that we carried out in the office, four out of ten reasonably complex replies given by us on the telephone were incorrect, simply because the customer had not given us all the information that would be needed, to arrive at a correct judgement.

Hence, in the future we will not be able to give telephone information on any problem or usage of a program that is in any way complex. If a customer has a problem loading his program or does not know how to boot up his disk, then fine, we can answer that on the telephone very quickly. If, however, he is using the program in such a way that it necessitates us researching either the manual of the program or the machine, or anything else, then we ask the customer to submit a keystroke by keystroke report of what he is doing, plus complete details of his hardware and software. Our technical staff will then reply by return of post on the basis of the customer's letter.

ADE AND PRO-ADE — A DRIVE EMULATION

ADE is for Models I/III. Pro-ADE is for the Model 4. Although ADE has other advantages, one of its prime functions is to provide additional directory entries in a system. The acronym might, therefore, be renamed as Additional Director Entries! It does, in fact, stand for A Drive Emulation because ADE solves the dilemma of too few directory entries, by emulating or enabling a two tier directory structure. This emulation uses one or more spare logical drive assignments. It works by interfacing a driver between that logical drive assignment and a collection of emulated floppy disk drives which physically exist as special disk files on one or more disk drives. More often than not the storage device used to hold an emulated drive is either a large capacity two sided floppy disk, or a hard drive. With ADE you can create these emulated floppies to look like standard 5" or 8", one or two sided disks, in either single or double density. "ADE floppies" are part of the system. The data or program files stored on such floppies will look and act exactly like any other floppy file. The user can create as many as will fit on a disk drive. Their use is totally transparent to the operation being carried out, and obviously they are accessible to any DOS command and all application programs.

IFC AND PRO-IFC – INTERACTIVE FILE CONTROL

The plain IFC is for Model I/III. Pro-IFC is for the Model 4. IFC stands for Interactive File Maintenance. With the advent of high capacity storage both on floppies and on hard disks, the average user often finds that he have accumulated a large number of files on disks – some of them wanted and some of them not. Frequently this multiplicity of data also means that files have to be moved from one disk to another. The average user will probably have a purge now and again, but more often than not he is dissuaded from doing anything serious about his disks because of the inelegance of using the many commands such as COPY, KILL, REMOVE or PURGE. In other words, the evil day is frequently put off because the task is not made particularly easy. IFC provides this ease of use. The housekeeping or maintenance tasks are performed interactively with the computer from a menu control screen. The tools are provided to List, Copy, Delete or Rename a single file and, perhaps more importantly, also a group of files. In order to work upon a group of files, of course, those files must be marked in some way and there are a number of commands available in IFC to tag files. The mass functions include COPY, DELETE and RENAME but not, of course LIST. As the whole purpose of IFC is to make life easier for the operator, a Help function is also included as is also a function to list Free Space, the ability to execute a DOS command and the selection of a new drive. To make life easier still, Wildcard tagging is also supported.

CREDIT CARD ADDRESSES

It is important that customers notify us, either on the telephone or in written orders, of the address by which credit card companies know them. Failure to do this inevitably means that the company is going to refuse the application. Furthermore, if it is below our limits and, therefore, an authorisation is not required it can mean that we do not get paid – we are not very keen on this! If it is necessary to give us two addresses then that is fine, but we must be told the card holder's "official" address.

DSM4 – A DISK SORT UTILITY

This is a Model 4 or 4P utility and is, of course, compatible only with TRSDOS 6.x. Usually Molimerx makes it a policy to have the actual software in hand before describing it in this Catalogue. In that this is a Christmas list, however, it will be at least early in the new year before another list is sent out. So, the following description is simply taken verbatim from the LSI press release. We should have our first stock by the time you receive this list. so if you have any queries you can give us a call:-

"Now available from Logical Systems Inc., a versatile Disk Sort utility for the Model 4/4P. DSM4 is a high speed, disk virtual sorting utility which eliminates the burden of sorting from your applications software. DSM4 will create and maintain index files for you. Since the sort is disk virtual, your only limitation is the amount of available disk space, not available memory. DSM4 can sort almost any type of field in a file. The length of each field may be up to 253 bytes. The field types that DSM4 will handle include compressed integer, single precision and double precision fields, in addition to ASCII data. Single and double precision numbers may be in the format used by Model 4 Microsoft Basic, or may be in "C" floating point format (as implemented by Manx Aztec "C").

With DSM4, disk files can be up to 65535 logical records with an LRL of 1 to 1024 bytes. You may specify up to 24 select fields to determine which records will be included in the sort. Any type of relation (e.g. equal to, less then, greater than, or equal to, etc.) may be applied to your selection criteria. In addition, logical operators (AND/OR) may be used. For instance, "sort by Zip all people with a last name of either Smith of Jones". Additional fields may also participate in the sort. Example: sort in Zip Code order and alphabetically within the same Zip Code. Sorting may be in either ascending or descending order. DSM4 may be instructed to skip records that match a user specified "deleted record" value. You may also save a "template" of the sort/select specifications to disk, and control DSM4 with JCL.

Perhaps the most impressive feature of DSM4 is the speed of the sort operation. Compare these statistics to the sorting method you are currently using: Select, sort and create an index of 1000 records. Selecting and sorting on a name, zip code and two double precision fields (41 characters) will take under 30 seconds from floppy disk, under 20 seconds from hard disk."

smal-LDOS VOUCHER

We feel that it is self-evident that the £15 voucher given with smal-LDOS up until about a year ago, became ineffective when the price of LDOS was halved a few months ago. For the record, however, such is the case.

UPDATES

LABELMAKER

This program has undergone a large update. Although a number of small things have been changed, the greatest effect on the program is the addition of a number of supported printers. The current version is LABELMAKER-2. Prior versions only supported the MX-80 printers, although they did so regardless of whether the printer had Graftrax or not. The new version supports in addition to the MX-80: the FT-80, the FX-80, the RX-80, the F/T and the MX-100 so long as this has Graftrax. Non-Epson printers now supported are the Gemini 10, the NEC and the Prowriter (C.Itoh 8510A). Customers reading this update notice may also wish to refer to the author's new program Nametager described elsewhere in this list.

POWER DRIVER

Two new printers have been added to Power Driver. The most important in the U.K. is the FX-80. Hitherto, only the MX-80 with Graftrax was supported. Powersoft have also told us that this version supports the FX-100, and we have sold it to customers for that machine without any problems, so presumabley it does. For some unknown reason it is not mentioned in the manual, however. The other printers are the Microline 92 and 93.

FILES

This program, described elsewhere in the Catalogue, is a straight-forward easy to use database for the Model 100. The present modifications are listed here as an update but, in fact, they have required almost an entire rewrite. There have been widespread changes to the report generation feature. Perhaps a quick description of how the new features can be used would describe them best. Fields are selected for the report by using letters A-U in the order in which to print. For instance, if five fields are required for printing then the letters A, B, C, D and E are used to select them. The program tests for correct sequence and then requests printer width. If the report will exceed the printer width, then the procedure is aborted. Otherwise, the title is input and the screen becomes a window on the report headings which can be input as desired. When complete, the title and headings are printed, and the report proceeds as in the previous version of Files.

A word processing link has now been added. This has necessited the insertion of a subject menu which is selected as number 7 from the old main menu. There are four options, the last of which is to return to the main menu. The three important ones are to Create a data file, Create a document, and Merge files and print. The Create data file option is used to convert data written by Files into a form more easily read for merging. The second Creates a document by calling Text. This part, incidentally, may only work on U.K. models of the 100. The third option Merges files and then prints them.

Certain changes have been made to the RS232 routines. The chief import of which is to make Files more compatible with other RS232 devices.

HYPERCROSS

A number of new British formats have been added to Hypercross, as they say, by popular demand. The LSI Octopus machine is being used widely in this country now, so the two formats of 40 track double sided double density and 80 track double sided double density are now included. Also the Gemini 80 track double sided double density format has been added. The newer versions of the Montezuma Micro represents something of a nightmare for a program like Hypercross. The latest version adds many formats and apparently there are eight that the system now supports. No doubt this is going to provide problems in the future. A future update of Hyperzap, incidentally, will be helping in this respect. Some of the double sided formats in the Montezuma are incompatible from version to version. Hence, if one has a large collection of double sided disks to transfer it is very time-consuming, because one has to transfer via single sided intermediaries. The Hyperzap issue scheduled for the new year will have an Autopilot routine included for this chore. Whilst on the subject of Hypercoss, some customers have got themselves a little bit mixed up on its application, and we would like to re-emphasize that although Hypercross is terrific, it is not miraculous. It can only work as a transporter if the TRS-80 hardware itself would work. We have had requests, for instance, to add the Apple and Sirius formats. This is not possible because the peculiarities of those machines mean that the TRS-80 hardware literally is unable to cope. Another popular request has been the BBC and the same remarks may well apply to that, although we are looking into that one still. Again, we would emphasize that Hypercross is principally intended for MS-DOS, PC-DOS and CP/M machines.

PRODATA

Prodata is the disk equivalent of Matrix Manipulator which is described elsewhere in the Catalogue. It has now undergone several updates, the most important of which perhaps is a complete rewrite of the manual. As we have had occasion to mention before in this Christmas listing, microcomputer users as a race have undergone several changes over the last couple of years. The Prodata manual was written originally with certain assumptions in mind, one of which was that the readers would be familiar with microcomputers. Nigel Dibben, the author, has rewritten the manual to make it considerably more user-friendly. Nonetheless, it must be borne in mind that manipulating a matrix assumes certain items of knowledge on the part of the user, not the least of which is a knowledge of matrices'. A new command has been added to enable the output of data to the screen. Additional changes have neen incorporated to enable the user to use several disk operating systems with Prodata.

HINTS AND TIPS — CHRISTMAS 1984

As most of you know we have recently expanded into the Sanyo machines, had a PCW Exhibition and now the Compec Exhibition for the Sanyo. Regrettably, therefore, I have had no time to prepare a Hints and Tips column this time out. Rather than say nothing, however, at least an expression of the Season's Greetings from Molimerx to all of its customers and suppliers is in order — Happy Christmas!

JANUARY 1985 LISTING

SNAPINVOICE — INVOICING, STATEMENTS AND LEDGER MADE EASY

This program has been written to fill that area of the market below the Sales, Nominal, Purchase and Stock Ledgers usually sold as an accountancy package. Although these suites are extremely good for the customer who requires a full accountancy package, they do represent the taking of a hammer to crack a nut for the smaller business that simply wants to maintain a comparatively lower number of customer accounts plus issue invoices and statements. SnapInvoice is comparatively low priced and certainly way below the packages. It therefore represents very good value for the smaller businessman. It also has the attribute of being compatible across the line of the Tandy machines, that is to say the Model I, Model III and Model 4, in either Model III or Model 4 mode. Customers must, however, as always, stipulate because there are different versions.

The capacity of SnapInvoice depends on the capacity of the drive being used; this remark applies in two dimensions. Firstly the length of each customer's account will depend on the space available on the disk, secondly the number of customers that can be put on one disk will be regulated by the number of files permitted by the DOS. Two drives are well nigh essential although it would presumably be possible to run a very small system on one drive. Hard disks will be compatible so long as they are treated by the disk operating system as a normal drive, which of course most hard disk drives are. Multiple disks are supported so long as it is understood that it is the user's responsibility to arrange his filing system, because the program comes set up assuming two drives and two data disks to be exchanged in the second drive, the first drive being kept for the system and program. The manual comes with complete instructions on how to manage your data disks. In making the buying decision it is only necessary that you be aware that many options are available but that in the end result the capacity of the program will depend on the drives and types of drives available.

As we have said, SnapInvoice is intended to fill a straightforward need in a simple, efficient manner and it is priced accordingly. However, there are surprisingly few restrictions in the program. Two VAT rates are supported and the system uses carry forward technique; in other words a statement will contain all of the transactions since either the account started, or the file was last sent to archive. In addition to plain blank printer paper, headed or printed stationery may be used. In this case the printing must lay within the first thirteen lines of each sheet. When blank paper is used the company name and address is automatically printed in the first thirteen lines. Provision is made for adding comments to an invoice and credit notes are automatically sensed by the inclusion of CN in front of the credit note number. Apart from then being posted to the other side of the ledger, the credit note contains a slogan reminding the recipient that it is not to be paid. As two values of VAT are available, the percentage and amount of VAT is noted on each line of the invoice and then of course totalled at the bottom. The customer's file carries forward the normal information, that is to say the customer's name, address and telephone number, credit and debit totals. Incidentally, if the user elects to use pre-printed stationery, then none of the printing should appear on or below the fourteenth line; in other words special columns and lines are not required and would indeed be ignored by the program. This enables many users to utilise their existing letterhead stationery so long as the VAT number is stated thereon, although of course this could be included as a comment.

In summary, SnapInvoice is a no frills, low cost invoice/statement generating program which maintains a ledger account for each customer.

BEEP – ENHANCEMENTS TO MODEL 4 BASIC

Needless to say, BEEP is an anachronym and stands for Basic Enhancement and Extension Package (one honestly wonders from time to time where the Americans get them!) and as this description would imply, it is an extremely useful program which implants into TRSDOS 6.2 Basic all of those lovely little short cuts, abbreviations and convenience features that the user has become used to over the years, but Microsoft stubbornly refuse to put into their interpreters. For the last eight years, independants have had to provide these sort of patches. The best known of course were the Snapp series, which so unfortunately came to an end. Probably the first were those implanted into TRSDOS 2.1 by Newdos + . At any rate, the battle continues. Microsoft continue to make their interpreters as strict and demanding as they can and independants continue to supply patches which make them as user friendly as possible. BEEP is the latest and is applicable only to the Model 4, using TRSDOS 6.2 and BASIC version 1.1. The enhancements are pretty standard. There are four abbreviations, A, D, E, and L, standing for AUTO, DELETE, EDIT and LIST. The normal full-stop and comma abbreviations are used for the current line and EDIT mode. The ones that we ourselves use most commonly are also present, namely the use of the four arrows to list the preceding, succeeding, first and last lines of the program. There are two very useful new abbreviations, these are C and M. The former allows the copying of a specified existing line number to a non-existing line number, and M does the same thing but actually moves the line; in other words, deletes the existing line. The final enhancement in BEEP is a hidden one, in that the coding has been tidied up so that the loading and saving of Basic program are significantly increased in speed. This will not apply, however, if the program is loaded or saved in ASCII.

CAT – DISK CATALOGING

Before we forget to mention it, CAT is available in two versions (as with all Misosys software), ZCAT and PROZCAT. The former is for Model I/III and the latter for Model 4. There is little to be said about this disk catalogue utility. It comes from Misosys and is therefore first class in quality. Roy Soltoff, the owner of Misosys, essentially wrote all of LDOS, so it is not surprising that CAT is compatible with that disk operating system only. Although one supposes that can no longer be said, as TRSDOS 6.x. is essentially LDOS 6.x. To be absolutely correct, therefore, one has to stipulate that these programs of Misosys and L.S.I. are compatible with LDOS and TRSDOS 6.x. However, that aside, CAT performs a fairly straightforward function for the LDOS user. Elsewhere in this catalogue is described a program called Super Directory, which is not compatible with TRSDOS 6.x. Hence the motive for introducing PROZCAT. ZCAT is also being stocked because despite its duplication with Super Directory, a number of LDOS users prefer to keep with utilities that come from Misosys. We do not intend to describe CAT any further. It does contain a few bells and whistles, more so than Super Directory, but essentially functions are similar, thus readers are referred to the description of Super Directory for further information. CAT is probably the better choice if the operator is using LDOS or TRSDOS 6.x.

JKLGRAFX – GRAPHICS SCREEN PRINT

One of the most annoying things about screen dumps to a line printer is that any graphics existing on the screen may come out in a number of different ways, but none of them will be a true representation of the actual graphics on the screen. So far as we know, it is impossible for an author to come up with a system that would fulfill this need and would be compatible with all disk operating systems. JKLGRAFX is compatible with LDOS using either 5.1.3 or 5.1.4 on the Model I and the Model III. The printer, of course, must be a dot-matrix, dot addressable type. It must also be able to interpret the following commands:–

Esc, 'A', N	Set linespacing to $^{N}/_{72}$"
Esc, '2'	Reset linespacing to $^{1}/_{6}$"
Esc, 'K', N1, N2	Set graphics data field, single density
Esc, 'L', N1, N2	Set graphics data field, double density

All the normal LDOS rules apply to the entering of parameters for this program. The parameter HEAVY has been added to differentiate between single and double density graphics. JKLGRAFX occupies only 220 bytes more than the standard KI/DVR.

MACH2 – A FILE SPACE ALLOCATION UTILITY

Long term LDOS users will recall the hiatus that occurred some time ago when Bill Schroeder of L.S.I. came up with the idea that the random method of file allocation, traditional to the TRS80 machines for so long, might be wrong. It will be recalled that traditionally when the machine was asked to open a file the disk space where that file commences is random. The idea was, and is, that according to the law of averages, files will therefore be spread uniformally over the disk, thus giving the directory, which is normally situated on the centre track, the best opportunity at speed of access. The contra argument propounded by Bill was that if all files start (rather like MS-DOS) at the first available space on the disk, then whatever time is lost by going from the directory to the starting track will be made up by the fact that files will tend to be made up of more contiguous blocks of code. Whether you support one argument or the other is probably, in view of the fact that one is speaking of such a tiny amount of time, to a large extent more academic than anything else. It does have a high relevance though, when data files are considered. These will probably be frequently accessed by the applications program and therefore the more compact they are the faster the job will be done. MACH2 permits the user to be in complete command of the space allocated for a file. It has important applications, regardless of whether you are a commercial programmer wishing to construct optimised master disks, or whether you are a sophisticated user striving to squeeze every bit of performance out of your system. MACH2 consists of four utilities. The first is a Mapper to show you where the files are positioned on a disk. A useful gimmick is that this utility will generate on command a blank map. The second utility is an allocator. This is perhaps the most important of the four, for it allows you to allocate the space for any file. The third utility is a calculator to help you with the dog work of deciding where files will go and finally, the fourth utility is called Handy, which is, to some extent, an automatic allocator in that it easily allocates a large block of contiguous space.

As the cost of hard disk drives comes down, in some cases dramatically, so the number of people using them multiplies, apart from being a business fact, this also happens to be a fact in our own particular industry. Although I personally deplore the hanging of the hard disk on to a Model I or Genie computer, there is no doubt that on the Models II, III and 4 a hard disk makes life much easier. Hopefully, prices will come down even further and so even more of us will be able to afford the luxury of mass storage. One of our very, very old customers, Dr. Ian MacAndrew of Cumbria, wrote, under his company name of Praxis Medical Software, a suite of programs for the General Practitioner. In passing, I would like to give Dr. MacAndrew a plug. He has been kind enough to send us a copy of his program and although it is not within our bailiwick to stock such specialised programs, we would like to recommend his software. Certainly any doctors that are interested can write to us for further details. Anyway, the reason that I mention Dr. MacAndrew is that he was one of the first people to use hard disks on the Model III for his commercial software. He wrote to me the other day mentioning a point that had cropped up regarding his hard disk and it suddenly occurred to me that users who were used to using floppy disks for so many years, without any flaws, might not be aware of one idiosyncrasy of the hard disk. Floppy disks almost invariably have no faults in them. Here at Molimerx we reckon to have a reject percentage of disks for actual flawed surfaces at under .001%, consequently floppy users subconsciously think that this will continue on, when they change to hard disk, but it is not so. A hard disk is divided into one or

more platters. Physically a platter is a circular piece of metal coated in certain ways, rather like a rigid gramaphone record. As the head may contact this platter on either side it follows that one platter may have one or two heads. Nowadays one gets a number of platters per drive, hence the multiplicity of capacities available for hard disk. Generally speaking, the number of platters, and indeed the number of heads, per drive is of no significance to the end user. For the person writing a hard disk driver, however, it is of the greatest importance. The point that I wished to make in these ramblings is that it is perfectly possible, and indeed not uncommon, for a platter to have a surface fault on it. Many manufacturers put a note, sometimes on the bottom of the drive, as to which sectors or tracks are faulted. The point that Dr. MacAndrew quite rightly makes is that usually a disk operating system does not contain a Locked Out Track Table, usually because there simply is not room in the directory track. The result of this is that in many instances a faulty track will not be locked out automatically by the system as it is in floppy disk operating systems. Thus the occurrence of parity errors and such like will be increased. **But** the difference between these parity areas, and those that one does occasionally get on floppies, is that they will always be in the same tracks. The moral of this particular story is therefore, that if you get parity errors frequently on the same track and sector of a hard disk, a) do not worry and b) just work around it. This latter, incidentally, can prove to be quite difficult. Elsewhere in this list is described a new utility from Misosys called MACH2. As I dictate these notes, I do not know whether this will work with a hard disk, but if it does it would be the obvious way round avoiding flawed granules. Dr. MacAndrew, incidentally, also pointed out to me that he found that these parity errors could show up as GAT errors. I personally have never experienced this, but I am sure it must be so. The way he got around the problem on a particularly hard drive was to rather laboriously get dummy files on to the bad tracks and then just leave them there.

POWERSOFT

Break Through!

Everybody knows about the dollar versus pound crisis. The day of one pound being the equivalent of one dollar will almost inevitably come, probably before the spring. What people do not always think about is the effect this has on importers, in our case importers of software. A couple of years ago a pound was worth two dollars, now effectively it is worth one. That is a one hundred per cent difference in all of the financial calculations that go to set up an end price.

We have used the above circumstances as a motive to have long, and frequently painful, discussions with Dennis Brent, the President of Powersoft, and have now finally been successful in arranging a licensing deal. From now on all Powersoft products will be manufactured in Bexhill.

We are using the interim period, whilst we are getting binders made and documentation printed, to make a truly remarkable introductory offer. Until the next flyer we will sell the Powersoft products mentioned below at the prices shown. We must emphasise that although the program will be exactly the same as usual, the documentation will not (where applicable) be in a binder as it usually is and will be photostats of existing documentation. In other words, we can make this offer chiefly because of the money we will be saving on the documentation. So that there can be no doubt — the programs are exactly the same quality, on exactly the same disks, as usual. It is only the documentation which will be changed. And of course these products are subject to our usual support and warranties.

	Present US Catalogue Price	Present Molimerx Price	**New Special Offer Price**
Backrest	$ 99.95	£80.50	**£52.00**
PowerMail +	$150.00	£94.30	**£63.00**
PowerDriver (any)	$ 29.95	£22.94	**£16.00**
* PowerScript	$ 39.95	£32.20	**£22.50**
PowerDraw	$ 39.95	£28.75	**£19.00**
* PowerDot II	$ 59.95	£51.75	**£36.00**
SuperUtility Plus (I/III)	$ 79.95	£65.55	**£46.00**
Super Utility Plus (4)	$ 79.95	£65.55	**£46.00**
ToolBox	$ 69.95	£42.55	**£30.00**
Toolbelt	$ 49.95	£42.55	**£29.00**
Text-Merge	$ 50.00	£43.64	**£30.50**
WD HardDriver	$ 99.00	£86.25	**£58.00**

All the above prices include VAT. Note that prices have been left untouched in the Index and that it is the above right-hand column price that is operative until the next flyer. Not mentioned are the two Powersoft books, the reason for this is that they are out of print at the moment as they are being revised. We will be printing them in the UK, but there is going to be a considerable delay due to the revision.

MAY 1985 LISTING

LITTLE BROTHER – A NEW DATABASE

Little Brother is a new database from Logical Systems the company, of course, that wrote LDOS. So far as Tandy machines are concerned Little Brother is compatible with the Model IV using TRSDOS 6.2. There is a version available for MS-DOS which we will be selling for the Sanyo machines. It is in fact said to be compatible with all MS-DOS versions 2.0 and above, so we assume it may work on some of the Tandy machines that support that system but we have no knowledge of that. It is, running under PC-DOS, compatible with the IBM PC. There are two main features which set Little Brother aside from other databases; first of all it has a very high capacity. Subject to the available room on the disk a file, for instance, can hold up to 65,534 records and each record may consist of up to 64 fields; these are very generous figures. Each field may consist of 154 characters but the total byte count for each record should not exceed 1024 bytes. The second important feature of Little Brother is its ease of use or user friendliness – or whatever else one wants to call it. It has an advantage over Datawriter in that the modules which Little Brother uses are transparent to the user, thus although disk access time is still considerable, as indeed it has to be with a database type program, one is not having to consider which module to call-up and so on, at all times. The user friendliness comes about by reason of the fact that HELP files are available on line whilst using the program at almost all times. Generally speaking, the program is run by splitting the screen into two sections. By far the greater in size is the top section which is that part of the screen in which data is entered by the user. The bottom two or three lines are used as command and information lines, there are usually five or six options which can be chosen from the Menu, which is carried laterally across the screen on one of these bottom lines. A cursor is moved along until the reverse video field which it controls is over the command required, then the Enter key is hit. One of these commands is always HELP. We found this to be a very attractive feature, particularly as after access to the Help file one returns to the screen where one left it. Little Brother contains all of the features of an advanced database management program, plus a few extra. Obviously all of the fields and field names can be defined by the user but it is nice to have the screen definable as well. We know a lot of customers who like their databases set out in particular ways on the screen, Little Brother enables them to do so. The same remarks apply incidentally to the Printer. One can lay out forms very easily with Little Brother. Obviously records may be added, modified, deleted and adapted in a number of other ways as can be done with other databases. There are a number of types of data fields which can be defined ranging from alphanumeric to calculated fields. A nice feature is a literal field which allows any ASCII character to be entered. One field may be defined as a Calculation field. Quite complex calculations can be defined – all of the four arithmetic functions may be used. Little Brother can be run automatically, that is to say without any operator intervention and frequently used Little Brother procedures such as selecting, sorting and printing records can be saved for future use. In this way entire job streams may be produced so that Little Brother may work on its own without help. To do this Little Brother takes advantage of the Batch Processing ability of the disk operating system. This means that almost any disk operating system function can be combined in the job stream. Another nice thing about Little Brother is that it uses an Index system. This means that the user creates an Index to his data by sorting the information in any field (except calculated fields) so that the data records can be accessed in either ascending or descending order. Using an Index enables the operator to find any piece of information within a matter of seconds, even if there are tens of thousands of records within your database. Little Brother requires 128K of RAM, two drives and TRSDOS 6.2 on the Tandy Model 4 machine.

BBCDISK – TANDY/BBC TRANSFER

The deluxe transfer program is of course Hypercross which, incidentally, has been further enhanced in this list by the addition of a large number of new formats. One of the formats that neither Hypercross nor any other transfer program supports is the BBC. The reason for this is that the BBC machine handles its input/output rather differently than any other microcomputer and a transfer could not therefore be dealt with in the normal way. This program therefore fills this gap because its principal function is to enable the exchange of files between the Tandy Models I or III and the BBC machine; or, of course, to transfer files from the BBC to those two Tandys. As will be appreciated the transfer of data between two such dissimilar machines is not easy. We wish to make it clear therefore that we have tested this program on a standard BBC machine, that is to say the BBC Model B using Acorn's DFS version 1.2. Whether the program would work properly with other versions of the DFS or any other variations we do not know. Obviously programs like this are generally used to transfer Basic programs from the source to the destination because, machine language programs for instance, would have little application when they reached their destination machine. However, data files can be transferred and, particularly in the world of word processing, this would be a big application. BBCDISK operates under LDOS versions 5.1.4 on the Model I and the Model III and also of course on the Model IV in Model III mode. Two drives are mandatory. In addition to transferring files to and from the machines mentioned BBCDISK carries out a number of other functions, in particular the display of a BBC disk Directory, a listing of a BBC file and the deletion of a BBC file. Incidentally all of the "work" in BBCDISK is done on a Tandy machine, not on a BBC. In other words the program is able to recognise and read BBC formats on a Tandy machine. The program is written in C and hence input/output redirection is available. For instance the program will easily handle the supply of hardcopy of, for instance, a BBC directory, or even a BBC file list, simply by redirecting to the printer; the same remarks apply to disk redirection. The data may even be viewed on the screen sector by sector as it is transferred. Yet another nice feature of the program is that after every sector is written to the BBCDISK it is immediately verified to ensure that it can be read. The author has been very kind in supplying a number of utilities, in addition to the program. Unfortunately, as this list goes to press we are not sure how many of these utilities we will be able to get onto the distribution disk, but hopefully it will be them all. One utility is to format a disk in the BBC format, in other words in a format that the BBC machine will understand. Another enables a tokenised BBC Basic file to be changed into ASCII. Two other utilities have nothing to do with the transfer process, the first allows the mapping and display of file layout on your DOS disks by granule, the other is a neat little utility for speeding up the SYSRES command in LDOS. All in all this is a very nice package being sold at a very reasonable price. We would like to thank Mike Lewis the author for submitting it to us because he did so more with the idea that it may well prove useful to the TRS80 and BBC community rather than to make a lot of money out of it!

SAID – A FULL SCREEN TEXT EDITOR

Said is a full screen text editor which may be used to edit assembler source, C language source, or any other ASCII text files. Said is compatible across the board of Tandy machines, that is to say, on Models I, III and IV. When used on the latter, and the machine is fitted with 128K of RAM, Said provides three editing buffers which in turn offers the added capability of moving blocks of text from one buffer to another. Said features no less than 36 separate command functions which cover pretty well the entire spectrum of screen editor commands. In addition Said supports typeahead, making Said into a first class screen editor. It does, having come from Misosys, require the owner to have LDOS. The Model IV version of this program is ordered by adding the word PRO in front of the program name.

MLIB – A RELOCATABLE ASSEMBLER LIBRARIAN

This utility from Misosys is aimed at those customers who habitually use Microsoft compilers and assemblers, in particular MACRO-80, BASIC-80, FORTRAN-80 and LINK-80. Some of these of course were sold by Radio Shack in various forms; they were sold by Molimerx when Microsoft were directly supporting the Tandy machine. A problem which is common to all of these packages is the considerable frustration which arises when trying to deal with relocatable libraries. MLIB is intended to overcome this frustration. Unusually for Misosys, the compatibility of this program is not restricted to LDOS. So far as we can see it is compatible with TRSDOS, both on the Model I and III and of course IV. The Model IV version of this program is ordered by adding the word PRO in front of the program name.

MAY 1985 LISTING

MSP-02 — MISOSYS SUPPORT PACKAGE

This is a collection of utilities from Misosys to support LDOS 5.1.x. The Model IV version is PRO-ESP. MSP-02 consists of eleven different utilities as follows:—

CRLF/FLT — This filter program allows the DOS video driver to properly handle carriage return and line feed pairs sent to it.
CTLG/FLT — This filter will cause the machine to beep every time as ASCII bell character is sent to the filtered output device.
DED/CMD — DED is a disk editor which allows the modification of the contents of any compatibly formatted disk. It is to a large extent a zapping program.
DOEDIT/FLT — DOEDIT is a filter program that allows the editing of video information and permits the edited information to be passed back through the keyboard device.
IOMON/CMD — IOMON is essentially a filter program which when installed monitors the disk input/output for errors and allows the user to take corrective action when such errors occur.
NAME/CMD — This little utility enables the user to change the name and/or date of a stipulated disk.
NODAM/CMD — This utility is mainly intended for Model III users and permits the reading of a disk that does not use the F8 data address mark for the directory track.
PRTOGGLE/CMD — Allows the linking of the video device to the printer with a single key stroke.
RD40/CMD — Permits the reading of a 40 track disk in a 80 track drive.
UNKILL/CMD — With this utility a user can recover a file which has been inadvertently deleted from a disk.
XONXOFF/FLT — This filter implements the standard XON/XOFF handshaking protocol for those serial devices that require it.

As can be seen these utilities offer a wide range of advantages for the LDOS 5.1.x. owner.

PRO-ESP — UTILITIES FOR THE MODEL IV

This collection of utilities is very similar in format but not in content to MSP-02 utility package described elsewhere in this list for the Model I and III. It does contain different utilities as follows:—

ALTDISK/CMD — This is a disk drive simulator which creates a 32K or 64K drive in the second bank of RAM. It therefore follows that 128K memory is required.
ALTLD/CMD — This utility provides a simple way to rapidly save and store the entire contents of the alternative RAM bank to and from a disk file.
ALTRES/CMD — A replacement for the SYSRES parameter of the SYSTEM command.
CRLF/FLT — This filter program allows the DOS video driver to properly handle carriage return and line feed pairs sent to it.
CTLG/FLT — This filter will cause the machine to beep every time an ASCII bell character is sent to the filtered output device.
CBT324/CMD — Converts Model I and III Basic programs to run on the Model IV. As with all of these programs there are some disclaimers. Essentially the utility adds spaces, strips the CLEAR statement and converts PRINT @ Statements for the 80 column screen.
DED/CMD — DED is a disk editor which allows the modification of the contents of any compatibly formatted disk. It is to a large extent a zapping program.
DOEDIT/FLT — DOEDIT is a filter program that allows the editing of video information and permits the edited information to be passed back through the keyboard device.
FKEY/CMD — Permits the redefining of codes returned by the Function keys on the Model IV.
IOMON/CMD — IOMON is essentially a filter program which when installed monitors the disk input/output for errors and allows the user to take corrective action when such errors occur.
MINIDOS/FLT — Allows the user to access some DOS commands without the necessity of being at the DOS prompt.
NAME/CMD — This little utility enables the user to change the name and/or date of a stipulated disk.
PRTOGGLE/CMD — Dynamically links the video to the printer with a single key stroke.
RD40/CMD — Permits the reading of a 40 track disk in a 80 track drive.
UNREMOVE/CMD — Recovers a file which has been inadvertently removed from a disk.
XONXOFF/FLT — This filter implements the standard XON/XOFF handshaking protocol for those serial devices that require it.

As can be seen the above constitute a rather valuable and useful collection of utilities for the Model IV user.

PROCESS/CMDFILE — A MAINTENANCE TOOL FOR CMD OR CIM FILES

This one is a little bit confusing because CMDFILE is the name of quite a well-known utility in LDOS which allows the user to transport tape programs to a disk environment. We should therefore hasten to say that this CMDFILE has nothing whatever to do with the earlier one and merely constitutes the Model I/III version of PROCESS. Process is a powerful machine language program that has been designed to provide total maintenance of program modules on a record basis. This means that it references the load module as a multi-record type, variable length record file — just like the operating system loader. By using the various commands in the Process menu, you can completely reorganize the load structure of a given module or modules in order to make them more efficient in terms of loading speed and occupied disk space. Process also provides the capability of converting CMD type load modules to/from CIM core-image load modules. This is especially useful to generate program files in binary form for PROM burners. The CIM structure is identical to the COM structure used in other types of operating systems. You also get the capability of appending two or more CMD machine language load module files into one file. This is useful to concantenate two or more separately assembled object code files, concantenate two or more non-contiguous blocks of code, or, also, couple two or more programs together so that they load together. The user has control of the program's transfer address or entry point. CMD files can be copied from one system disk to another system disk on a single drive system provided both disks use the same operating system. Also provided is the capability of totally mapping every record in a load module and determine the type as well as the load address range of each load record. You can optionally request that a map listing be sent to a line printer. Any record may be removed in the load module. By far, the most powerful function included in this tool is the reorganization capability of the PACK command. This powerful function converts any X-type Patches to D-type Patches (X-type Patches are generated by the LDOS Version 5 or LDOS/TRSDOS Version 6 PATCH utility). It then sorts the buffer by load address, to construct sequential load records and generates a load module file that uses maximum sized (256-byte) load records. This feature is very useful for reorganizing large inefficiently generated load modules such as Tandy's COBOL package. The PACK function is also useful for reorganizing the out-of-sequence load modules generated by the LC compiler (the records are out-of-sequence due to the separation of program and data regions during the compilation process).

DD&T — DE-BUGGER, DISASSEMBLER AND TRACE UTILITY

This package is a set of three utilities for the LDOS user who is interested in assembly language programming. It has no application to customers not interested in assembly. It is available for Models I, III and IV, using LDOS on the first two, and TRSDOS on the latter. The first utility is DD/CMD which is an enhancement to the system debugger provided in the disk operating system. It provides the added capaibility of an on-line disassembler during program debugging sessions. The other two utilities in the package are concerned with tracing the execution of a program. The first permits the user to execute the target program in an environment which maintains a record of all program activity. For the technically minded, after selecting an address range, this range is divided evenly into 256 "buckets". A counter is kept for each "bucket". Two other "buckets" are used to track activity in areas below and above the selected range; every time a system heartbeat interrupt occurs, the program determines the program counter at the time of interrupt and updates the counter corresponding to the correct "bucket". The trace file is written out to disk. The second of the trace utilities, and the third in the package, reports statistics computed from the data in one or more of the trace result files. As can be seen, DD&T is aimed at not only the assembly programmer, but also the reasonably advanced programmer at that. The Model IV version of this program is ordered by adding the word PRO in front of the program name.

DESCRIBE – DIRECTORY DESCRIPTOR EXTENSION

Describe is a tool to extend directory entries on the Model I and III using LDOS, and Model IV using TRSDOS 6.x. The descriptor field added for each file consists of up to 63 characters in length and is used so that useful information may be added to describe each file stored in the directory. Describe provides commands to manage these descriptors as well as providing the user the means with which to construct customised sorted directory displays to the display screen, and/or a disk file. Describe also has a command to allow the user to invoke a DOS command, as if was in fact at the DOS Ready prompt. Model IV version of this program is ordered by adding the word PRO in front of the program name.

PRO-ZSHELL – MODEL IV VERSION OF ZSHELL

ZSHELL is described on Page 176 of the current catalogue; PRO-ZSHELL is the Model IV version of that Model I/III utility.

POWERSOFT

The special offer contained in the last list appears to have been very popular and it seems as if customers would prefer to go without the binder for the documentation and pay a lesser price. Accordingly, at least for a while, we will be maintaining the Powersoft prices mentioned on Page 188 of the catalogue.

BASIC/S – AN ALTERNATIVE BASIC COMPILER

Basic compilers for the Tandy machine have, historically, been somewhat thin on the ground. The original on the Model I was the Microsoft full compiler. This was extremely unwieldy to use but apart from a rather sad history of bugs it did work. The problem was that Microsoft never extended it for the Model III and although a number of zaps were made available by disk operating system authors (such as the one for LDOS) Microsoft themselves would never support the Model III. Furthermore the code generated by the Microsoft version was extremely heavy. In some cases it could be double, triple or even quadruple the length of the Basic source code. The next compiler was Accel from Southern Software which is the one that we sell at the moment. This is available for Model I and III, it is a nice compiler, particularly the latest version the Accel 4, but it is, so to speak, a quasi-compiler. It does not compile all source code when it is being run and if it encounters something that has not been compiled then it automatically goes back to the interpreter for that to take over. In the main this is not a deficiency, but apart from one version of the Accel 4 version, it does carry with it the penalty of having to go into Basic and out again in order to run the compiler. Additionally, again with the same exception, there is a Run time penalty of code to be carried in the machine. At any rate with the demise of Microsoft's support of Tandy, we thought that it was time to bring in an alternative compiler, hence the introduction of BASIC/S. Which incidentally, has been available in the United States for quite a long time. As a matter of fact BASIC/S actually consists of two separate compilers, one is called BASIC/S the other is BASICSII. The principal difference between them is that the II version is an integer compiler whereas the other supports full floating point. Naturally with the integer version an increase in speed is gained over the floating point. Both compilers come in one package. Neither version is particularly DOS dependant although neither is compatible with TRSDOS 1.3 on the Model III. Although two drives are preferable on both machines one drive is feasible. However many drives are available, 48K must be installed. The big advantage of BASIC/S is that the source code is compiled into a /CMD file with no linking or run-time module required. The increase in size of the object code is not too bad, it varies from about 1.2 times the source code to twice the size of the original. The biggest deficiency is that neither compiler supports full Level II Basic although the other side of that particular coin is that most of Level II Basic is supported and those statements that are not, are the least consequential in the interpreter. Both sequential and random disk input/output is supported and this includes files with logical record lengths less than 256. Up to two dimensions are allowed in arrays and any one program can have up to 20 arrays. BASIC/S compiled programs can chain from one to another without the loss of variables. Customers should be aware that some programs will require re-writing before they can be compiled. The reason for this is that like the Microsoft compiler BASIC/S requires pure Basic code. In other words, the short cuts, abbreviations and so on with which we have all become so used to, and for that matter attached to, will cause BASIC/S to have a heart attack. The following table shows the list of Commands, Keywords or Functions supported by BASIC/S:

DEF	FNOPEN ("R", "O", "I", "E")	LINE INPUT #	PRINT #	CLOSE	
GET	PUT	FIELD	CLEAR	MKI	CVI
MKS	CVS	LSET	RND	RANDOM	CLS
LOF	IF	PRINT	PRINT@	LPRINT	INPUT
ASC	CHR$	VAL	STR$	LEFT$	RIGHT$
MID$ (both sides of =)		INSTR	INKEY$	LEN	GOTO
GOSUB	RETURN	CINT	CSNG	SET	RESET
POINT	PEEK	POKE	INP	OUT	AND
OR	FOR	NEXT	USR	DEFUSR	DATA
READ	RESTORE	RUN (as in RUN A$, A$ = any dos command)			SIN
COS	TAN	ATN	EXP	LOG	ABS
SQR	INT	SET EOF	SCAN	HEX$	CMD
ON GOTO	ON ERROR	INPUT@			

Another advantage of BASIC/S is its comparatively low price. So one could sum it up by saying that it is a good general purpose Basic compiler at a low cost, with the added advantage the object code compiled is straight/CMD. The trade off being that not all Basic is supported.

HYPERCROSS – AN UPDATE AND ANOTHER VERSION

Hypercross is described elsewhere in the catalogue, it is a utility enabling the exchange of files between various Tandy machines and alien machines – and of course vice versa. In the version we are currently issuing there are some 60 or 70 different alien formats that are supported. Another version is now available which supports 130 odd formats. Otherwise the program and its use is exactly the same as the original. Obviously there is a great propensity for error with these two versions available, hence we are adding a subscript at the end of the program name. The 70 format version will henceforth be called "Hypercross(XT)". The 130 format version will be called "Hypercross(ALL)". It is most important, of course, that customers order the version that they require.

DATAWRITER – SPECIAL OFFER

We have been able to negotiate a licencing agreement with the authors of this database program in the United States. We are therefore able to pass along some of the savings that we will experience by manufacturing the product in this country. The new price of Datawriter therefore is now £69 plus VAT.

DC10 – ADDITION TO AN OLD FAVOURITE

The DC10 Flight Simulator is described elsewhere in the catalogue. It is totally an instrument flight simulation. No graphics of the outside world are included at all, because that is how you fly the aircraft in real life. One deficiency of such an approach, however, is that one uses the ILS (Instrument Landing System) to make all landings. Skilled pilots consider the ILS approach as the most technically difficult part of the flight, so it is not really surprising that many laymen customers have found difficulty in getting back to the ground! For these customers, the author has now written a new version of DC10, which is used for practise only. When the program is first started, the pilot is on an approach to Miami airport in Florida, some 25 miles out. He can practise his landing on either of two runways, approaching either from the East or the West. In addition, various auto-pilot aids have been added, so that in fact it is even possible to have the machine land itself in this version. Both the author and ourselves were extremely anxious that the realism of the DC10 simulation should not be breached more than is necessary in this Miami version of DC10, so the pilot will still need to have his wits about him in order to get into such a position that he can activate the auto-pilot feature. DC10/Miami is now included in the main DC10 package which therefore now contains three programs, DC10, DC10 Miami and the Flight Planning Aid. Existing owners of DC10 may purchase DC10 Miami for the sum of £8.00 inclusive. Customers requiring this upgrade must send in their original DC10 disk.

UPDATES

POWERSCRIPT

Powerscript has now been updated so that it will work on the Model IV in true Model IV mode.

POWERDOT II

Powerdot II now supports the OKIDATA Microline 92/93 printers.

Hints and Tips – May 1985

One thing I have been meaning to mention in this column for quite a while is that there **is** a difference between the Model IV and the Model IVP – that is to say apart from the obvious ones. I do not think anybody including Tandy themselves, at least in this country, know what the very small differences are. They obviously must have something to do with the loading of the ROM image into memory from the disk, as compared to the stationary model method of having the ROM in firmware. Presumably the addresses cannot be different, or the ROM, in whatever form it is, would not work. At any rate, for better or for worse, and for whatever reason, it is a fact that a number of pieces of software do not operate either at all, or at least in the same way, on the Model IVP as they do on the Model IV. Wherever we are aware of this difference we try and state it in the catalogue. But of course at least on the first occasion that the problem arises with any particular program, we would not know until it had actually been tried. This is rather an unsatisfactory position but as Tandy are unwilling to tell anybody what the small differences are there is not very much that we, or any other software house, can do about it. I would emphasise that the differences manifest themselves in problems on only very rare occasions. The reason that I remembered to mention the point this month is that we had a customer who found one of these difficulties on his own program and wrote in asking if we could tell him if there were any differences between the two machines. We recited the above, namely that there are some but nobody knows what they are. He came back an hour or so later and said that he had spoken to Tandy and they said that there were no differences. He complained that we were leading him astray! As a matter of fact the whole thing is probably rather academic because as most of you will know Tandy discontinued the production of the IVP model some months ago. Incidentally this does raise another point which is of some importance namely the amount of support that Tandy are giving to their 8 bit machines nowadays. As many of you have complained to us about the response to your questions to Tandy, it would appear that this support, is to say the most, minimal. Historically, over the last seven years or so, whenever Tandy have not done something, or done less than their customers think they should, we here at Molimerx have had to shoulder the burden to take up the support slack. This was fine so long as we got the support from Tandy that we used to get. Nowadays our letters and telephone calls go unanswered and this seems to be the experience of everybody else as well. I think I should make it clear that regardless of what course Tandy take in their Computer Division, Molimerx will continue to supply software for the Tandy 8 bit machines for the foreseeable future. Those customers who are switching to 16 bit, generally sell their machines to a friend or a relative. The result of this is that our software goes with the machine plus our catalogue. So effectively, at Molimerx, we are just changing one customer for another. These new customers, and our old ones, can rest easy in their minds that Molimerx – and a number of American publishers – are standing by the 8 bit Tandy machines. There is one stipulation I would like to make however and that is that it is the software that we will be supporting. If Tandy, who are after all the manufacturers of the hardware, decide either officially or unofficially, or have already decided officially or unofficially, not to put much support into their 8 bit machines then it would be unreasonable for anybody to expect us to step into the breach and supply support for the hardware. In other words what we are saying is that we will be continuing to sell new and existing software for these machines for some years to come, we will not however be interested in taking up time answering hardware questions when the hardware manufacturer themselves have omitted to do so.

AUGUST 1985 LISTING

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We have been supplied with our normal ration of complementary tickets for the PCW Show. These are available to customers on a first come first served basis. Our stand number is 1501 and we hope to see as many of you as possible.

DOSTAMER – A PLEASURABLE WAY OF USING DOS

Since disk operating systems became more sophisticated the difficulty in using them has increased. More importantly, the speed with which they are used by the average operator has dramatically decreased. In fact some disk operating systems are so sophisticated that Help utilities have been specifically written for them. This is, one supposes, inevitable. The more features that you have put into anything the more difficult and the slower it is going to be to use. DosTamer addresses this problem with a vengeance. It is probably one of the most useful such programs that we have ever seen. Before we describe it we should list the disk operating systems which it supports. They are all well known DOS's on the Model I/III machines, that is to say:

LDOS 5.1.x DOSPlus 3.4 and 3.5 MULTIDOS 1.6 NEWDOS 80 2.0 and 2.5 TRSDOS 1.3

Note, somewhat surprisingly, the absence of TRSDOS 2.3. If you use TRSDOS 2.3 then presumably the authors of this program assume that you have no need of a DosTamer! For the Model 4, TRSDOS 6.x is supported. As a matter of fact, the authors did tell us originally that DOSPlus 4 is supported on the Model 4 as well but we are not sure of this at the present time. If this is of interest, then you should certainly telephone before ordering. All of the I/III versions are supplied on the same disk so it is not necessary for you to define your disk operating system for either the I/III or the 4 versions but you must tell us which machine you are using. The first thing that you see when you fire up DosTamer is a sorted directory of the files on the disk in drive O. This list takes up the top two thirds of the screen. In the bottom third is a list of the 40 key strokes that can be made and the effect that they will have. A screen print of that bottom part of the screen is as follows:

```
                          DX6        01/06/85  135K Free
0-7  Get Drive   A  Dir Vis/Inv   I  Dir Inv.      V  Dir Vis.      S  Dir Sys.
E  Execute/Ret   T  Tag Files     U  Untag Files   @  Execute Tag   L  List File
P  Print File    R  Rename File   C  Copy File     F  Free Space     B  Basic
/  Put Comment   ?  Get Comment   #  Delete Cmnt   Z  Reset File     N  Name Disk
*  Print Dir     X  Dos Command   K  Kill File     M  Free Map       D  Dir A
CTL D  Debug     CTL U  Dir Mod   CTL P  Dir Prot SPACE  Page        ENTER  Execute
F1  User Menu    F2  View Cmts    F3  Set Search   BREAK  Exit       Tagged     0  K
```

The screen therefore, consists of a list of all the files on the default disk, which when you power up of course is O, plus the above illustration. Also, superimposed on the first of the files names is a cursor. This may be moved around by way of the arrow keys, so that any file can be indicated at will. The file over which the cursor is placed is the current file. As you will see from the illustration, in addition to a constant list of the commands available the user is also shown the disk name, the date of its creation and the amount of free space upon it. Most of the commands are self explanatory, R for renaming a file for instance does not require a lot of description. Some of them will benefit from some comment however, so we will now go through those: The first command defines the default drive; when you first boot, this is of course O but you may well wish to operate on files on other drives, this command is how you change them. Note that drive numbers from 0 to 7 may be entered. The existance of those drives will depend on the hardware that you have and upon the disk operating system that you are using. The E command is a very useful one, simply positioning the cursor over the appropriate file and pressing E will cause that file to Execute. The /RET after this entry in the illustration, reminds the user that the program will return to DosTamer after the file has been executed. Just pressing the Enter key will execute the file but with no return to DosTamer. One of the particularly nice features about the Execute command is the fact that the program automatically recognises certain extensions. Thus for instance a /BAS extension will cause the program to not only load a Basic file but it will also load Basic before it does so. Indeed /BAS is the default. The three commands concerning comments which are all called by pressing the / key, the ? key or the hash sign, deserve particular comment. These are unbelieveably useful, particularly if you are using a lot of different files from time to time. The aggregate effect of them is that the user can write comments for a file, store them into an index file and call them whenever he wishes to do so. This means that specific comments on the contents of the file, or lists of commands relevant to that file (or whatever) can be constantly kept on hand. We find this particularly useful when we know that we are storing a file away and will not be accessing it until many gallons of water have flowed under the bridge and we have therefore forgotten all about what was in it! Indeed we feel that the program is worth buying just for this single feature. You may by now have realised that we are rather enthusiastic about DosTamer! The most powerful function is the ability to create your own menus. As we have said DosTamer comes with the menu that we show in the illustration above, but you can also manufacture any menu that you wish, up to a limit of 10 per disk. In this way a user can define a single key stroke to represent a complex DOS command. For instance, some of the commands in LDOS are quite lengthy. Take for instance the Format command. Although you can simply type Format and the drive number and then answer questions, it is far quicker to enter Format and a full command line. But this can extend to up to almost a line of entries – not only boring but the error risk is high. With DosTamer you can define, say, the key F to stand for Format and then a whole line of parameters. Thereafter going to the user menu and just typing the letter F will cause all of that line to be executed. On the Model I/III versions up to 143 keys can be so defined. On the Model 4 no less than 200 are available. What is perhaps more important is the fact that you do not have to remember what these keys mean. The menus that you have customised are always ready at the touch of a key to remind you. On the Model 4, and incidentally we are using that version throughout this description as an example, the user menu is accessed with the F1 key. So F1 and F will substitute for maybe 60 keystrokes! The T command brings us to another major feature of DosTamer and that is the ability to Tag files. By Tagging selected files the user can see the size of the file displayed and totalled and then with single keystrokes remove passwords, make those files invisible or visible, remove modification flags or add those flags, kill or remove all Tagged files and so on. One more keystroke and you can even copy all Tagged files over to a drive. As you can then return to the original drive and kill off all Tagged files, the sum total is that selecting files from one disk to copy over to another and then killing them off on the original, becomes a very, very easy operation. The X command enables any DOS command to be entered with a return to DosTamer. The F3 key enables the user to set search parameters. In this way only files that you are searching for need to be displayed on the screen, for instance if after pressing F3 you enter the search parameter /CMD, then only CMD files will be displayed on the screen. Wild cards are supported, thus for instance typing **C will display only files with the letter C in the third position of the file name. The Z command has particular application to the Model 4. On that machine a question mark is sometimes displayed in the directory, this means that for some reason or other the file has been left open by the system. Pressing the Z key will close all of those files correctly. The List command, the letter L, gives you the option of listing the file to the screen in either ASCII or Hexadecimal. We particularly liked the Hexadecimal type of display because DosTamer seems to use Debug for this chore and therefore not only gives you the Hexadecimal contents of the file but also the ASCII. The N command allows the user to rename a disk. Quite often the contents of a disk change as time goes on and the original name allocated to it has little or no meaning. This command enables you to change that name to something that has a little more relevance.

In summary, DosTamer is probably one of the most powerful disk operating system controller programs that we have ever seen. It has been impossible to describe all of its features in this literature, but we have tried to cover most of the important ones. The only criticism that we have of it is that the documentation could be better. Normally this is a big factor but DosTamer is so helpful as the program goes along that one could almost say that it needs no documentation at all. In any event the instructions do contain all of the information that one needs, which after all is the main point. As customers will know, we deliberately try to refrain from recommending particular programs, but in this case we must break this rule, we thoroughly recommend DosTamer.

SPELCHEK – A DICTIONARY PROOF READER

Unfortunately the Company that produced Hexspell, which you will find listed elsewhere in this catalogue, is no longer in business and Spelchek has been specially written to replace that program. It is to all intents and purposes a standard Spelling Checker or Proof Reader program. In general, the purpose of Spelchek is the same as Hexspell, namely to go through an ASCII file and check the spelling therein. We always recommend that word processors, and therefore Proof Readers, should be run under TRSDOS because that is the basic standard of the Tandy machines. However, Spelchek has been tested with most of the other known disk operating systems and appears to operate correctly. Generally speaking, compatibility or otherwise will depend upon whether the DOS is compatible with the Bourne Pascal, sold by Molimerx, as the source code is actually written in Pascal. Spelchek should be compatible with all standard ASCII files. In particular it has been tested with files produced by Scripsit, the Electric Pencil, Typitall, Pascal files generated by Pascal version 6.3 and Basic files saved by using the ,A option. We have to make some sort of a disclaimer because there are so many word processors on the market now and some of them generate some rather odd code but, subject to that, we can see no reason why Spelchek should not be compatible with all widely-used word processors on the Tandy machines. Spelchek is compatible with the Models I and III and the Model 4 operating in Model III mode. Two disk drives are required. In addition to the standard capacities, 80 track seems to also work fine. Obviously a printer is desirable. In the case of the Model I Tandy, lower case hardware and driver is assumed. In common with other Proof Readers the function of Spelchek is to go through the ASCII file and compare each word with its built-in dictionary. When it meets a word that it cannot match, it gives the user three alternatives. Namely, to skip the word, that is to say ignore the unknown word and proceed to the next, secondly to learn the unknown word, that is to say to add it to its existing dictionary and finally, you may change the word. After doing so the new word will be again checked against the dictionary. One feature unique to Spelchek that we particularly liked is the ''delete trailing s option''. This useful function economises on dictionary space by recognizing certain types of plurals. For instance, where most spelling checkers will treat ''day'', ''day's'' and ''days'' as three separate words, in Spelchek it can be treated as a single word. Spelchek supports the re-organisation of its dictionary, so that over a period of time the fastest possible checking speed is achieved by putting most commonly used words in the most accessible place in the dictionary. Other options supported by Spelchek include the ability to check hyphens or to ignore them, in other words treat the hyphenated parts of the word as two separate words. Spelchek may be instructed to check letters and numbers or just letters; you can also set it to check everything. When this global selection is made then all characters will be checked except for the space character, graphics characters and cursor control codes. A good example of these options is the difference that Spelchek will perceive between 12.50am. If numbers are valid, then the whole phrase 12.50am will be checked. If they are not, then just the ''am'' will be checked. Enabling the global check can be dangerous because punctuation marks following words will be treated as part of the word. The actual dictionary of Spelchek occupies about 65K of disk space and considerable effort has been made by the author to select the most sensible words for inclusion in this dictionary. The most commonly used words by any particular user are gradually sorted into a separate file which is in fact loaded into memory every time the program is used. The result of this is that the words which a given user uses most frequently are always available for fast access from memory. In addition, a utility is supplied so that a user can construct his own dictionary. In this way a user can fill a dictionary with, for instance, foreign words or scientific terms, and keep it separate from the standard dictionary. Very sensibly, the author of Spelchek has kept this feature separate from the main program so that it cannot possibly be used accidentally. Spelchek has an Auto Learn feature in it, so in order to construct your own dictionary the contents are typed in on a word processor and then the Auto Learn feature of Spelchek is used.

SUPERLOG – AN EXTREMELY ADVANCED ELECTRONIC NOTEBOOK

Before we forget to mention it, Superlog requires TRSDOS 6.x (obviously) for the Model 4 and requires LDOS for the Model III. It will also run on the Model I and would require LDOS for that as well. Different versions are available for Models I, III, 4 and 4P (in III mode) and for Models 4 and 4P in true Model 4 mode. The former is called Superlog 3 and the latter Superlog 4. Do not forget to order the right one! Elsewhere in the catalogue you will find described the program Infoscan. It will not do any harm to refresh your memory by going back and reading the write-up on it, for Superlog is to all intents and purposes a de-luxe Infoscan. It is in fact, if there is such an adjective, a de-luxe, de-luxe Infoscan. The sales blurb from the Publishers says that Superlog ''represents an evolutionary step in information management''. For once we are inclined to agree with these rather typically Amercian hyperboles – Superlog does indeed depart from the traditional database constraint and does indeed, in our view, permit the user to interact with the computer on his own terms. Most of the information that we all input from day to day is in a random and unformatted form. Most of us have all been used to pencil and paper for far longer than we have been used to computers. Superlog uses the full power of the computer for storage and retrieval, but emulates the familiar pencil and paper for data entry. Most importantly, however, Superlog resides permanently (or rather, until the computer is re-booted). The area in which it resides is protected, hence it can be accessed at any time that the computer is on, without affecting other programs or functions. When Superlog is activated and the desired file selected, the computer screen displays a single page of an electronic notebook. Vital statistics of the page are displayed and you then have around 1K of space within which to add, erase, change, move or otherwise modify the text. You may also move in sequence or at random to any other page. New pages can be created and pages can be copied or information transferred. Most importantly, at any time you may return to your previous program or select another notebook file. On the Model 4 version (and this is the one that we are using for this description) you can even carry information back from Superlog to your foreground program. Essentially, therefore, with Superlog you are using your computer in both the foreground and background mode – about the closest Tandy is going to get to true windowing. No restrictions are placed on your use of pages; a single notebook file may contain up to 32767 pages and the number of separate notebooks is limited only by your disk storage capacity. Two search functions plus a wild card characteristic allow rapid access to specific information, despite the random nature of storage. Superlog 4 supports hard disk access; password protection of files; several new advanced editing commands; text wrap-around and enhanced search with the wild card characteristic.

CNVBASIC – CONVERT BASIC TO MS-DOS, CP/M OR MODEL 4

CNVBASIC is a program which will aid in transferring TRS-80 Model II/III Basic programs to MS-DOS, CP/M or TRS-80 Model 4. Note the use of the word aid; there is no program that can be guaranteed to tranfer Basic programs from one machine to another with 100% efficiency. It is to be confessed, however, that CNVBASIC comes about as close as we have seen. One of its advantages is that the program that it is going to convert must be in tokenised form, in other words straight from your SAVE command. To put it another way, source programs must **not** be saved in ASCII. The program produced is in ASCII format and therefore is ready to be loaded into the destination machine. As a matter of fact, quite frequently that is about all that has to be done, for CNVBASIC not only inserts the mandatory spaces around the keywords, it also looks after a large number of those awkward PRINT isntructions. It is the only program that we have seen that will, for instance, convert a PRINT @ statement to LOCATE. Another useful feature of the program is that it is almost entirely automatic. It is run from DOS and simply calls upon the user to define the source file specification and the destination file specification; the program then does pretty well everything for you. Newdos 80 handles its parameter investigation rather differently than does any other DOS, hence there are three separate files on the disk for Newdos 80 users. We recommend the use of LDOS. To all you people with nasty thoughts, this is not just because we sell it; CNVBADIC comes from Powersoft and we happen to know that they only use LDOS! Indeed it is unusual for them to have included facilities for Newdos 80. Hence the ''regular'' version of CNVBASIC is likely to be more free of bugs! One of the things we particularly like about this program is that it does admit to the possibility of errors. There is a page and a half of instructions in the manual which lists various items of syntax which might give difficulties. We have used CNVBASIC a few times and have been very pleased with it.

ARRANGER – AN AUTOMATIC DISK INDEX SYSTEM

Over the last few years we have published a number of disk indexing or cataloging programs. Our sales have really distilled down to two programs however, Super Directory and CAT. Arranger may well be the definitive one. And the reason that we are stocking it is because customers may well feel that it is a superior program to Super Directory. CAT really is stocked because it comes from Mysosys. A lot of people are Mysosys fans and prefer to keep with their software. There are in fact two versions of Arranger, namely Arranger I and Arranger II. Arranger I is available in single density for the Model I and Genie machines only, Arranger II is double density and will work on Models I, III or 4 (the latter in Model III mode) and reads Models I, III and 4 disks in single or double density. Make sure that you order the right one. There is a difference in price and we will not feel very much inclined to change them if you buy the wrong one! So long as your budget will go to it, we would recommend Arranger II because then you have got everything and you need not worry although, of course, on a Model I you would require a double density board. All Model I doubler boards are supported including the Radio Shack one. Unfortunately there is no upgrade available for existing owners of System Directory because the two programs are written by different authors. Although Super Directory is a perfectly adequate program, it did seem to have problems in reading disks created by some of the less common disk operating systems. One of the big advantages of Arranger is that the manual quite categorically states that the program is compatible with all disk operating systems. Of course you can get away with a lot more of that sort of statement in the United States than you can in England! So over here we should say that Arranger has worked with all of the disk operating systems that we have tried it with and that includes all of the ones of which we have knowledge for the machines in question. It is by far the most versatile of the two programs. The vital statistics are that Arranger will support a listing of 11,000 programs maximum, 255 file names may be stored per diskette and 255 disks per file. 48K is required and only one drive. An existing disk operating system is not needed because Arranger comes on its own DOS. What is more is that it is not protected; it can be freely backed up, indeed there is a utility built in for that. It would seem that if a given disk drive will work with a standard machine, then the disk that it makes can be read by Arranger. It supports all of the normal track configurations of 35, 40 and 80. Unless we have missed it in the manual, it seems to be silent on the subject of 8 inch disks, but then of course these cannot be attached to a standard Tandy machine. The program occupies 18K of memory and it has a large number of utilities built in. These are as follows:

Add	Change	Exit	Locate*	Print*	Scan*	Update
Backup	Delete	Find*	Manual	Re-name	Toggle	View*

The addition of an asterisk to the utility name indicates that printouts are available in that function. Formatted label printouts are available in Add and Update. The label format incidentally contains the disk name, the appropriate DOS, type of files on the disk and number of tracks. Only one or two of the above listed utilities require any explanation: Toggle refers to toggling between automatic and manual cataloging. The Rename of course refers to renaming a disk. The Update facility is useful in that it enables the user to keep Arranger current should you wish to add or delete something from a particular disk. Produce will produce an alphabetical list of some or all of the file names in your catalogue. The Find function of course enables you to search through your catalogue for a particular program. Locate is a form of FREE. The Scan function is a useful one, it permits the user to look through individual directories on all of his disks with all of the information on one screen, effectively you are paging through your disk library. The Change function is in fact changing a filter which allows the user to isolate any part of his disk library by setting up conditions based on disk names or other physical disk characteristics. When the conditions are set by the filter all disks that do not fit the filter parameters will be ignored. View, Locate, Find and Scan all support the filter arrangement. Finally Manual will enable the user to type in file names manually rather than have them read automatically by Arranger.

SALES LEDGER

On page 78 of the catalogue is described Sales Ledger 1. This is a very good, general purpose, full sales ledger available for the Models I and III plus also of course Model 4 in Model III mode. We are happy to report that sales of this product have been sufficient to enable the authors to reduce the price. As a result the Sales Ledger for the Model III is now £150 and for the Model I £120. the 10% summer ''Whale of a Sale'' reduction applies to Sales Ledger as well as any other programme, so if you are interested, we would recommend that you buy it before the price goes back up, after the PCW Show.
Sales Ledger I is compatible with TRSDOS on both machines and we recommend that it be run under that system. There are some calls to the DOS in it and therefore operation with other disk operating systems may give problems.

LITTLE BROTHER – MAINTENANCE SUPPORT UTILITIES

In the last list we introduced the new database program called Little Brother. A support program has now been released for it called Little Brother Maintenance Utilities No.1. It consists of two extremely useful utility programs that can be used in conjunction with Little Brother data files. The first utility called LBMAINT, is an all purpose file maintenance utility. It enables the user to generate a new database file set from existing Little Brother data. In other words it is not necessary to restructure an existing database. It also provides an excellent means of rectifying old records from your database.
In using LBMAINT you are allowed to create your new database from all records in the existing file or from a chosen few records. LBMAINT will allocate only as many records as it needs to create a new file set. This feature alone is extremely useful for de-allocating space consumed by a database file if too many records were allocated for it. LBMAINT will give you total control over restructuring the database, any or all of the fields present in your existing database may be used and you may incorporate additional fields into a new base. Existing fields may be lengthened or shortened to either expand or compress your data fields. Even field-type conversions can be altered to some extent. LBMAINT is a corrective program in that mismatches between data and definition files may be corrected. Bad or unreadable records may be stripped out and existing Little Brother data files can be resurrected should the corresponding definition file become lost or unreadable. The second utility is called FIXTEL. The purpose of this is to re-chain all deleted records in a Little Brother data file should the deleted record chain become broken.

UPDATES

POWERSCRIPT

This is an entirely new re-write of the program. One of the most important improvements is that true Model 4 mode is now supported. In addition all versions of Scripsit are now supported and the new Powerscript adds new features to all of them. This new version incidentally, is version 4.2.1.

Within the category of Industry News, I am very happy to report that there have been considerable changes at Tandy Headquarters. You will recall that in the last list I reported the problems that we and many users had experienced in getting support from Tandy. The reason for this we attributed to the link-up between Tandy and ACT. More or less when that happened, or actually a little before, a gentleman by the name of Ted Russell was hired away from Tandy by one of the chains, to head-up their computer division. Tandy have now had the sense to hire him back, and a lot of things have been happening at Headquarters. They all auger well for the Tandy user and it now looks as if there is a complete change of policy at Tandy. Mr. Russell was kind enough to telephone and bring us up to date. Many of you will notice the new corporation name of "Tandy Computers" on literature and in stores. Although as I understand it, the link-up with ACT is still on, Tandy Computers will be in competition with them. At any rate, the inner workings of these corporate politics do not really concern the average Tandy owner, the important point is that there seems to have been a complete change of heart and although it will take some time, we are very hopeful that Tandy will yet again become a considerable power in the market-place. We feel that we should report to customers an event which has followed on this change of policy by Tandy. Lines of communication are in any business extremely important and Tandy made the point to us that in Tandy's hey-day it was really not of overriding importance that we should be in continual communication with them. Now however, both they and we feel that this situation should be rectified, so they have been kind enough to appoint us Tandy System Dealers. For our part we wish to make it clear that this does not mean that there is any change of policy here at Molimerx, we are **not** about to get into the hardware business. For years we have withstood the temptation of selling hardware, apart from a few accessories, and we continue to stand by that decision. However by being appointed System Dealers, it does mean that we will henceforth receive all of the international communications from Tandy. This will include not only the periodical price printout from their computer, but also the "classified" bulletins that they send out to their dealers. The result will be that from now on we should be fully up to date with whatever is happening. a byproduct is that we will be able to purchase Tandy software, and indeed on occasions hardware, at a discount. Therefore we will be able to sell the software on to our customers at the regular Tandy price. These moves are actually not formalised as we go to press, so we cannot at the present advise customers of the details. We do however, look forward to expanding our Tandy software line. In the past, although we have sold and supported Tandy programs to some extent, it is little secret to anybody that we have only done this in a half-hearted way. It looks as if this will now change. We would however, like to underline, emphasise, write in red or whatever, one point. Namely that this change is intended simply to improve the assistance and support that Molimerx can give to the Tandy community. There is no way that this, or any other arrangement, will change our policy, which was established in 1978, that Molimerx is totally and completely independent of the Tandy corporation and for that matter Tandy is totally and completely independent of Molimerx.

In the last list, we mentioned that in our opinion there were differences between the ROM in the Model 4 and the Model 4P. I gave an example of a customer who was quite annoyed that we should believe that such a state of affairs existed. Coincidentally, just after the last list was mailed out, I received a Newsletter from a Tandy support group in the States called Northern Bytes and that not only confirmed that there are differences, but in fact lists them in a great deal of detail. The article which stretches over a number of pages is entitled "Model 4 ROM and Model 4P ROM Image Changes" and is written by Jack Decker who produces the Newsletter. Mr. Decker is to be most sincerely congratulated for his efforts in bringing these changes to light. He in turn credits Nate Salsbury and John Hallgrem of Clear Water, Florida, for providing some of the information upon which his article is based. We would certainly add our thanks to those of Mr. Decker's, to those two gentlemen. The differences in the firmware are extensive and are far too long to be reprinted herein. Anybody who would like to have a copy of them can simply add a requisition to his order, or if no order is being made, send in a stamped addressed envelope A4 size.

As you will see from the beginning of this listing it is exhibition time again. This year our stand, number 1501, will be more or less equally split between Tandy and Sanyo software. Although every year shows some new faces visiting us, and we certainly would not wish to give our old friends the impression that we do not want to see them, we would if possible, like to see the many new Tandy owners represented. As some Tandy people have upgraded to 16 bit, many of them have sold their machines to people new to the market-place and it is such owners that we would particularly like to see. Obviously they ring and write to us every day, but personal meetings are far more meaningful. If you are a long time Tandy owner, then we would certainly like to see you again this year. If you are a new owner, we would particularly like to see you!

Christmas 1985 Listing

SBA — STRUCTURED BASIC APPENDAGE

If length of time of development is a criteria for the quality of a piece of software then SBA is surely of very high quality, because we first heard of it, from its author Dr. Beunis in Belgium, in mid 1984! At that time Dr. Beunis already had a working version but it has taken all of this time to actually get it to market. Apart from reflecting on the quality of the program, this must also surely reflect on the seriousness of it. It is a major piece of software and should be considered as such — and what is this important program? What it is not is that it is not just another Structured Basic utility. There have been a number of these, the best known is Logical Systems' The Basic Answer, TBA for short. Whichever the program, the whole point of them is to make it easier for the Basic programmer to construct his programs in a structured manner, in other words top down programming, not spaghetti junction programming. If you are a genius at programming in this way then you probably do not need any utility at all to help you, but you are indeed a rare breed if this is so. Obviously, a program written in a structured or logical manner is easier to follow and almost by definition will work more efficiently and more easily than does the spaghetti junction type of program. One great propounder of structured programming said that no Basic program should contain either a GOTO or a GOSUB statement in it. This seems a bit ridiculous but it probably gets the point across. The great deficiency of Basic, so far as structured programming is concerned, is that it is line number orientated. More often than not, when the author is writing the calling line of a GOTO or a GOSUB he will not know the line number to which direction is intended. He therefore either makes one up, takes a guess at where it will be or, more likely, breaks off his flow of programming to go and write the subroutine or other section of code to which the branch is to be made. This is not structured programming! The other school of thought, of course, is that, if a program works then that is good enough. Customers who belong to that school will not be interested in SBA. It is directed at the more serious programmer who wishes to get the most he possibly can out of his code and — as any programmer should — wishes to make life as easy for himself as he can.

The key to structured programming is the use of procedures. A rather bland definition of a procedure is a Basic subroutine without a line number, in other words, a subroutine which is called by name rather than number. The advantages to structured programming given by this facility are obvious. If our friend, about whom we were just talking, was busily writing his program and found that he had to direct a branch, he would not have to know the number of the line to which direction made; he would simply give it a meaningful name. The adding of procedures or, as they are known in some other structured programming aids, labels, brings with it a number of other advantages. For instance, what are we going to do about variable names? Should they have effect just during the procedure or should they be global and have an effect throughout the program. The above, therefore, is the general idea of structured programming and the approaches of a number of utilities towards it. Up until now, however, there has been one very serious deficiency involved with these utilities, and that is to say that they have had to be compiled, or at any rate re-manipulated, before they are of any use to the programmer. TBA was, as we have said, probably the best example before SBA came along. With that utility you write your code in source form and then it is put through a sort of compiler which changes all of your labels or procedure names, from the names into real life program line numbers. In short, an additional activity is added to the stream of programming. There are a number of advantages to SBA but probably its principal one is that this extra step is not required. The last word of the program title "Appendage" is well chosen; the facilities to allow structured programming, in particular procedure names, is appended to the original Interpreter by SBA. It is thereafter transparent, in terms of use, to the programmer. In other words, it is exactly as if the facility had been added to the Interpreter when Microsoft first wrote it. In yet other words, once you have loaded SBA you have an Interpreter capable of coping with procedures.

So far as compatibility is concerned, SBA makes no calls outside of the Basic ROM. It should, therefore, be capable of being used in any disk or, for that matter, non-disk environment. By the same argument it should be compatible with any disk operating system.

However, we have been in this business too long to make such a blanket assertion! The author actually used Newdos 80 when he wrote the software, so obviously it is going to work with that. So far as other systems are concerned, only one of the commands is likely to give trouble and the manual contains a list of the addresses which should be changed if this comes about. Also, the author is prepared to assist with any difficulties, so at least there is help at hand should difficulties arise. Furthermore, the manual runs close to fifty pages. Whilst on the subject of compatibility, incidentally, SBA is one of the few programs that we have accepted for publication recently that is **not** compatible with the Model 4. It is strictly a Model I/III program.
To summarize, therefore, the prime goal of a utility such as this, is to create the ability to write subroutine modules which, to a large extent, may be treated as 'black boxes'. Such subroutines or procedures then acquire the properties of, and may be used in a similar manner to, a new Basic statement. A new Basic statement, however, with a great difference because it is one that has been created by the programmer to his own specifications. The difficulty with this is that it is an inherent requirement that nothing internal to the subroutine should come into conflict with the conditions existing outside of it. Thus variable names and line numbers in particular should not conflict with the main programs. So that the programmer should not have to worry about such things, previous attempts at structured programming aids have interjected the stage of reprocessing the source code. SBA does not; it is a true addition or appendage to the interpreter and will look after all such matters without the programmer having to concern himself. The program that is written by the programmer, therefore, is directly executable; there is no additional stage to go through. A further big advantage that follows from this first one, is that the subroutines created have a high 'insertability', which is of particular importance to the busy programmer. With SBA, it is possible to compile a library of subroutines of disk out of which any master program simply picks, at execution time, the subroutine that it needs. It is somewhat akin to the Library approach in most disk operating systems. Finally, we would re-emphasize that SBA is a highly sophisticated, high level program and as such it is not for the faint-hearted or the inexperienced.

PULL DOWN MENUS – ROLL YOUR OWN!

The 'in thing' or fashionable item in the microcomputer world at the moment is windowing and pull down menus. This utility which incidentally, before any Model I/III customers get their appetites too whetted, is only for the Model 4, is all you need to construct your own pull down menus. For anybody not conversant with pull down menus, the expression is, for once, very descriptive. Whilst in any application program, pressing a particular key will cause a reverse video menu to extend down from the top of the screen with a number of options in it. An asterisk moves up and down, a choice is made, the menu is then retracted and the original screen restored as it was before the menu was pulled down. The effect is rather similar to a roller blind that one pulls down and sends up again. It constitutes an extremely attractive way of displaying menus and allowing the operator to make a choice. Up to five separate menus can be held in one section. All this means is that you can have five menus across the screen at any one time. A useful feature is that one menu can call another, in other words the title of the next menu can be an option on a previous menu. There is room on each menu for 20 options and the title of each option may contain up to thirteen characters. One of the big advantages of the menus created by Pull Down Menu is that imbedded blanks may be used in the options. With other programs this is not so and thus options have to consist of one word. This is particularly important in a number of applications where options frequently commence with prepositions, such as 'To File'. Once the menu has been built it may be called by Assembly, Basic or, presumably, any other high level language that is capable of calling a specific address. The point is that control is moved to the run time part of the Menu Build when the menu is required. After the selection has been made control is sent back to the calling program. So long therefore, as a high level language is able to do this, as Basic is, then there should be no problem. Just to re-capitulate, the effect of Menu Build is that, typically, you are running a Basic program. Instead of the normal menu being displayed on the screen, the user may pull down a menu and make his selection. The menu is then pulled up and the original screen returned to its original condition. The running program is picked up where it left off.
So far as the actual composition of the menu is concerned, it could not be easier, the utility MENUBLD is called, the screen clears, and a full screen editor automatically comes into effect. At this stage the screen will look similar to the following illustration.

```
SECTION 01
MENU 01

TITLE =

OPTIONS:

01 =                06 =                11 =                16 =
02 =                07 =                12 =                17 =
03 =                08 =                13 =                18 =
04 =                09 =                14 =                19 =
05 =                10 =                15 =                20 =

     GO BACK              SAVE SOURCE FILE      CLEAR ALL SECTIONS
     GO FORWARD           SAVE OBJECT FILE      EXIT PROGRAM
     FREE SPACE           LOAD SOURCE FILE      DIR

                    (PRESS F1 TO SEE MENUS)
```

As can be seen the majority of the screen is taken up by 20 spaces into which the options are typed by the user. There is a space for inserting the title of the menu at the top and the two items of information right at the top left hand side, are simply to inform the user which section he is in and which menu of that section. The nine options at the bottom are fairly straightforward. Go Back and Go Forward moves the display forward or back one menu. These menus, of course, are held in a buffer and the third option tells the user how much free space he has left with which to play. The three central options refer to saving or loading various files. The last three are to clear the buffer, exit the program and show the user a directory of what files he has on his disk drives. The expressions 'source' and 'object' incidentally have their normal meanings; the menu that you construct is manipulated at the construction stage as a source file. Prior to use it is saved as an object file. That is about all there is to it, except for one small further feature, which is that the sound available on the Model 4 is used from time to time to gain the user's attention. This is a very nice program, it constructs attractive menus which enhance any applications program. As it is only available for the Model 4 it is, of course, for TRSDOS 6.x. The only restriction on the use of the menus, of which we are aware, is that the area ECOOH to FFFFH is used at RUN time and this area must therefore be free which, of course, on the Model 4 it normally is.

TRSDOS 6.2

A number of customers were disappointed that we were unable to update their 6.x disks to 6.2. The reason for this was that Tandy decided to bring out a totally new and rather large manual. We have now made arrangements so that we can update and these updates are in stock. We will of course be following the Tandy price of £29.90 and although that does seem a lot of money for an update, we would re-iterate that the disk comes complete with a very full manual with a three ring binder covering both TRSDOS and Basic. It is essentially the binder that should have come with the Model 4's. There is also included in the package, or at least in those that we have opened so far, the Tandy hard disk operating system DOS.

SHARE PORTFOLIO AND ANALYSIS — A BOON FOR THE PRIVATE SHARE INVESTOR

Essentially this program is two programs in one. It is aimed chiefly at the private investor and will maintain for him, his folios of stocks, bonds and provide some analysis of market trends. It is for the Model 4 only.
We are aiming it at the private investor because of the capacities involved in the program. They are more than sufficient for him but probably would not be sufficient for a commercial investment house. The program will support 99 share holdings and it should be noted that in using the word 'shares' in this literature, and for that matter in the instructions to the program, it is used generically and covers stocks, bonds or what have you. The program is totally disinterested in the form of the investment so long as it has a name, a purchase date, a price paid and the amount of fees or tax involved. In other words any instrument that can meaningfully be reduced to those headings can be entered into the program. Within the 99 share holdings there may be up to 14 duplicates. In other words, the same share may be purchased up to 14 times at different prices and the program will still keep track of it. Sales, to all intents and purposes, are unlimited but the machine itself inflicts a ceiling of 500 sales before the sales disk has to be archived. We would guess that to the average investor this means well over ten years use, by which time probably the machine, and the program will be obsolete!
The sales data, and for that matter the share holding data, occupies a very small amount of room on the disk as the data has been totally optimized. Disk space, therefore, is not likely to be a factor. Whilst on the subject of capacities, the following maximums apply for entry to the program:

Quantity of any one share = 9999
Price per share = 9999.999 pence
Fees and other expenses = £999.99
Net cost per transaction = £99999.99
Total cost including expenses = £999999.99
Total expenses = £99999.99
Total price of all shares = £999999.99
Total number of shares = 999999

What this amounts to is that the total number of shares of any one holding is just under ten thousand. The total number of shares of the whole portfolio is just under one million. The maximum price that you can pay for one share is £99 and the total value at cost price of your portfolio must be under £1,000,000. A number of share prices are quoted as fractions and consequently a feature is included in the program so that fractions may be automatically converted to decimals for entry as data.
As we have said, SPA is divided between portfolio management and analysis. The former is essentially a database management program dedicated, or specifically sculptured, to the share market. The user may enter therein the shares that he owns and, as sales are made, they too are entered so that at all times he may access his portfolio. This is shown on the screen in a convenient format and the user may edit any part thereof whenever he wishes. This editing should not be confused with sales — a sale is entered and deducted from the present portfolio quite automatically. However, occasionally errors are made, and it is for this reason that an editing function of the portfolio is included. Still within the portfolio section of the program, is a statistics section. This provdes a large amount of information divided into three categories, that is to say totals of the current portfolio, sales since the last archival with aggregate profit or loss thereon and, finally, profit and loss by individual shares.
The analysis side of the program permits the user to enter data of almost any type gleaned from almost any source. The method of entry is rather like a spreadsheet, in other words like Calcstar or Lotus 1-2-3, whereby the operator enters the data into individual cells. One of the features of SPA is that this data can be of almost any origination. A typical application would be to enter, weekly, the values of the shares in which the operator is particularly interested and perhaps holds, plus the weekly FT Index or maybe the Dow-Jones Index and the FTSE. The point is that the method of data entry used is extremely simple and the data may come from anywhere, hence the user can enter in anything that is meaningful to him. If he prefers the FT Index to the Dow-Jones or the FTSE or whatever, then that is the one that he can enter. He does not necessarily have to use his own shares — he can analyse the trends for any shares he likes. The spreadsheet will accept up to 52 columns by 10 rows, allowing for 520 cells in all. This data can then be plotted by means of curves. These are displayed on the screen in a fairly rudimentary, but meaningful, manner. The screen dump utility built into the machine is used for any hard copy required. Not only, of course, is this essential for maintaining hard copy of the portfolio section of the program but it can also send the curves, drawn in the analysis section, to the printer.

MORE HARDWARE SURPLUS

Customers will know that from time to time we declare some of our equipment surplus and sell it off at half price. We have rather a lot this time, as follows:-

Video Genie -	£ 75.00
Genie 1 -	£100.00
Genie Expansion Box with full memory -	£100.00
2 BBC Model B computers (each) -	£100.00
1 Double Teac FD-50A 40 track single sided disk drive -	£125.00

In addition to the above 'normal' computer items we have available one Wollensak 2770 high speed cassette duplicator. This is a two track duplicator, in other words, it duplicates both sides of the tape at the same time. The tape speed is 13.3 times the original speed and wow/flutter is 0.15% RMS maximum. Speed accuracy is ± 1% and the frequency response is 40 to 10,000 Hz ± 3Db. It is therefore suitable not only for data cassettes but also for some audio cassettes. The bays are one master and two slaves so two copies can be made of the tape from a given master tape at any time. This machine costs just under £1,500 new and we are offering it at £700.
Prospective purchasers are referred to prior notices in the catalogue of these periodic sales that we have had, for the the terms of sale. Specifically, we have no hardware servicing facilities here, nor do we have any hardware expertise. The equipment is sold at a very low price and to the best of our knowledge it is in good condition — it is certainly maintained at regular periods but if anything goes wrong with it then the customer is on his own.

X-FTS — A FILE TRANSMISSION SYSTEM

X-FTS is a general purpose file transmission system for use with either a Model I or III under LDOS 5.1.x or under TRSDOS 6.x on the Model 4. These are, of course, separate versions of the program so you must state which you want. If you require the Model 4 version then prefix the X-FTS with ''Pro''. Thus: ProX-FTS. X-FTS allows the user to send a file to another computer via the RS232. It is a sort of dedicated smart terminal. It is compatible with the Ward Christensen or XMODEM protocols. Such a protocol is also used by Modem 80 which is the smart terminal that we sell the most of for LDOS. So X-FTS at one end, would be compatible with Modem 80 at the other. It is also, of course, compatible with X-FTS at the other end and rather importantly, with XMODEM running under CPM. X-FTS will operate in a JCL file as well as from the keyboard. Any error occurring in the transmission will be noted on the screen, indeed the program will continue to re-try until it achieves an area of free transmission or until the number of re-tries is exhausted. After the file transfer is complete, each computer is automatically returned to the disk operating system or to the application from which X-FTS was invoked. X-FTS has a number of parameters or switches which may be added to the command. Some of these permit easier transmission of files to CPM. Another parameter will permit the information that is being sent to be encoded, or decoded, for reasons of confidentiality. On the Model 4 an audible indication of the transfer status of the procedure can be called for. We have already mentioned the re-try facility; by adding a particular parameter to the command line the maximum number of attempts may be altered. In summary X-FTS is exactly what its acronym stands for — it will transfer files very efficiently and it is dedicated to that sole function, it has a number of features in it which one would not find in normal smart terminal programs.

PRONTO – A SIDEKICK FOR THE MODEL 4

Sidekick programs are well known on MS-DOS and CPM but so far as we know this is the first one for the Model 4 running under TRSDOS 6.x. A sidekick program is a software package which is loaded when the machine is first started up and remains in the background until such time as it is required. When it is, then even from an applications program, it may be called at the touch of a couple of buttons and whatever its features are may be used. After use, its window is erased and the original screen comes back and the user may continue on where he left off. Obviously such an arrangement has particular application for calculators. It is very useful to be able to break off either running or writing a program, to make a calculation and then go back to where one left off. The applications in Pronto however, are eleven in number, although for the usual reasons in this country, we do not support the automatic dial feature. The applications are as follows:-

Mail and Rotating Index File
Floating Point Calculator
Appointment File
Perpetual Calendar
Note Card Files and Pad
Display full 256 ASCII Set
Telephone List and Dialler
Save Previous Video Screen
Reverse Polish Notation Calculator
Simple Terminal
Typewriter Application

Pronto resides in high memory and reserves a 32k RAM bank for its programs and buffers. It can only, therefore, be used in a Model 4 machine that has 128K. When called, Pronto saves the current screen and the DOS overlay library into a buffer. It may call up to four windows simultaneously but only the last, or most recently called window, can be actually operated upon. After you have finished using Pronto it closes any window, restores the contents of the original screen and the DOS overlays, and returns control to whatever program was running when it was called. One of the particularly attractive features about Pronto is that it is able to transfer data between the windows and the application. This is called import or export. Pronto, therefore, lets the user import data into a window from a previous screen or export data from the current screen to another application. Of the eleven applications, four are default, that is to say the Calendar, Calculator, Index Card Filer and Phone Dialler. These default applications may be changed to any of the others, with a supplied utility, and this should be done because, as we have said, the dialler is not supported in the United Kingdom. There is not a great deal to say about the functions of the applications – they are fairly straightforward. The Mail and Rotating Index file is just an Index Card file of addresses. Of interest is the fact that the data structure matches that of Powermail Plus, thus there are 24 flags supplied which may be set or reset, in exactly the same way as Powermail Plus. If you are not familiar with that program you will find it described fully elsewhere in the catalogue. There are also two data fields, as with Powermail Plus. The floating point calculator provides the normal four function capability with Memory. Algebraic notation is used. Results are displayed in decimal or scientific notation. This Floating Point Calculator should not be confused with the RPN four function calculator because that is really a programmer's tool and provides for data entry in binary, octal, decimal and/or hexadecimal format. Three logical operators are supported as well. The Appointment File is a reminder or appointment book allowing you to schedule up to twelve entries for each day in priority or time order. If this section of Pronto is not called from the calendar application then it will default to the system date entered on powerup; however, if it is called from the calendar then it will default to the date currently selected. The calendar will display the month for any year from 1582 to 4902. Misosys are clever, but how they know the calendar will be the same in 4902 we really do not know! Anyway, it certainly gives a lot of years to choose from! The display of the ASCII characters is simply that, all 256 of them are shown in a single window. Deserving particular note is the feature that enables the user to build a string such as a graphic string, and then transfer the string to a waiting program. Although the telephone dialler is not supported, the Telephone List, which accompanies the dialler application is of some use – it is simply a small database of telephone numbers and descriptions. The application regarding the saving of the previous video screen is unlike the others in Pronto – it has limited use in day to day application and is actually provided in source form as an example of how to write an application for Pronto. The simple terminal application is just that. Finally the Typwriter Application changes your keyboard and printer into a typewriter – as you type out the character on your keyboard so it is printed on the printer. The one thing that can be said about Pronto is that once you have it you will never be without it.

SALE — BASIC COMPILER — SALE

There has been a long and sad history regarding a Basic Compiler for the Model III machine. For many years Microsoft totally ignored the Model III, at least so far as Basic Compilers were concerned, and it was left to the independents, specifically Logical Systems with their LDOS, to bring out patches that would make the Model I Basic Compiler operate on the Model III machine. Just last year, for some reason known only to themselves, Tandy brought out a Microsoft Basic Compiler for the Model III at £129. It was not accompanied, as one would expect, with a fanfair of trumpets and it is only recently that we have learned of it at all. Ironically it was brought out, either after the Model III became obsolete or just about at that time. We have been able to acquire a few of these programs, at what is virtually a give away price. We therefore have a very limited quantity of Basic Compilers to run under TRSDOS 1.3 on the Model III machine at £49.95. The last listed Tandy catalogue price was £129.95. Strictly first come, first served! Just in case there is any doubt, this is the Microsoft BASCOM not the quasi Compiler from Ryan McFarlane.

UPDATES

HYPERCROSS

HyperCross has been updated yet again with additional formats which in the ALL version now number 170. The XT version remains the same. Whilst on the subject of HyperCross there has been some confusion regarding the fact that we and Powersoft both sell it under different names. Powersoft call it SuperCross and they also include one of their utilities with it. HyperCross was actually written by a man who comes from Bexhill and we published it long before Powersoft came on the scene. It is therefore far more likely that our version would be more up-to-date than Powersoft's. The point is that we are worldwide distributors for Powersoft; any orders sent to Powersoft will be redirected to us and you would receive our version of HyperCross anyway! The utility that Powersoft include in their package is CNVBasic. We sell this separately and it is described on page 193 of the catalogue.

POWERDRIVER

There have been a number of new printers added to PowerDriver, namely the C. Itoh A10-20P daisy wheel printer. All SuperScripsit codes, except for double underlining, are supported. The Epson FX 80 and RX 80, and the Okidata Microline 92 and 93 were also added earlier.

FIVE INCH DISKS AND SLEEVES

The state of the art is such now that there is virtually no difference between single and double density, 40/80 track and single or double sided disks, so long as such disks are supplied by a reputable manufacturer. In common with many other distributors we are, therefore, simplifying the sale of these accessories by simply stocking one disk. This is the one that we use for our own manufacture and we have used it in all of the above configurations. In addition to the above change we have been able to bring the price down considerably because firstly, we have been rather high for a while and secondly, the simplification means a number of economies. Also that these disks are no longer sold with free binder sleeves. However, we have had to order, for ourselves, a vast quantity of plastic disk sleeves. These are the individual ones that go around the disk itself and are more often found as paper sleeves. These new ones are of particularly good quality because they have a small 'subsidiary' sleeve in front of the main one which is transparent. Consequently a card or whatever can be put in there, referring to the contents of the disk. We are going to sell those in lots of eight. They are dark blue in colour.

I am obliged to Mr. K. T. Rogers of Weston-super-Mare who was having troubles in booting Super Directory. This is a tricky program to boot because, due to its inherent versatility in coping with a number of different formats, it has to itself be constructed in a rather unusual way. He has had wide experience of the Model III, 4 and 4P machines and informs us that his earlier Model 4P was unreliable in booting Super Directory; in other words, when it felt like it, it would, and when it didn't, it didn't! However, he says that the newer 4Ps with the arrow keys grouped to the right of the keyboard boot Super Directory without any trouble at all. I think this just re-emphasizes what we have been saying for some time, that one has to be very cautious when saying that the Model III software is usable throughout this entire range and specifically that there are a number of differences between the Model 4 and 4P even though Tandy have not documented them. By the time you read these notes the new Model 4D version should be out in England; this is exactly the same as the old, except that it has double sided 40 track drives to give a maximum of 736k of disk storage. We understand that it also comes with a slightly upgraded version of TRSDOS version 6.2.1. As the upgrade digit is in the third column we presume that the differences in the DOS are minimal. I am not sure whether it is generally known that the existing TRSDOS, namely 6.2, supports double sided drives and for that matter 80 track drives. The only thing that you have to do is to include all of the formatting commands in the single command line. In other words, if you do not add any parameters to the format command, you will not be prompted for parameters that would enable you to go into double sided or 80 track but if you put them all in the first line, then you should be alright. A useful tip that purchasers of our BBCDISK program may want to have is a patch to enable the formatting utility to format to 80 tracks. The syntax is as follows:-

PATCH BFORMAT/CMD:d (DOB,8C = 50)

On the general scene, the Tandy computer world seems to still be very much in the doldrums. One hopes that the introduction of the Model 4D will help things along but despite the mighty oaths that Tandy took a few months ago, I have not been able to discern any great interest on the part of Tandy in their 8 bit machines. As a matter of fact, I was rather horrified to see in the latest catalogue that they only devote a dozen or so pages, out of 140, to computer products and perhaps more importantly neither the 4, 4P or 4D are mentioned. I was also disappointed to note that Tandy were not at the PCW Show in September. As a matter of fact, when I learnt of this, I telephoned them and was assured that one of their senior people would come down to our stand for at least one day. They also promised that they would send down some literature to give out on the stand. Unfortunately neither of these occurrences came about. We have also enquired about the lack of coverage of computers in the new catalogue and whether or not Tandy would be producing a computer catalogue as they did last year which, so we thought, might explain the lack of coverage. Apparently, they are not going to do this; there will be no microcomputer catalogue this year, unless they change their minds, but I am told that individual sheets on the individual machines are available on request. We have not yet put to the test whether this extends to 8 bit machines or not. In any event we shall continue to support Tandy products as we have in the past, for a number of years to come. The Tandy market in the United States seems to be quite lively. The reason for this, of course, is that the number of software distributors has distilled down to a very small number and there is still an enormous population of Tandy machines of various shapes and sizes over there. Anyway, I will leave you with those happy thoughts and it simply remains for me to wish you a Merry Christmas and a Prosperous New Year.

INDEX and PRICE LIST

PROGRAM	PAGE	MACH	MED	CAT	PRICE	VAT INC.
555	85	D	T	T	11.75	13.51
Access	182	D	D	U	15.00	17.25
ACM	98	AH	D	T	35.00	40.25
Accounting Trainer	124	D	T	E	15.00	17.25
ADE	184	D	D	U	31.96	36.75
Admiral Graf Spee	78	D	T	W	11.75	13.51
Adventure Epic Hero (1 tape)	101	D	T	G	8.75	10.06
Adventure Epic Hero (3 tape)	101	D	T	G	23.63	27.17
Adventure Epic Hero (3/disk)	101	D	D	G	29.50	33.93
Adventure Epic Hero (2/disk)	101	D	D	G	20.00	23.00
Adventure,Mysterious tape	3	D	T	G	8.75	10.06
Adventure,Mysterious tape	3	G	T	G	8.75	10.06
Adventure,Mysterious 3/tape	3	D	T	G	26.63	27.17
Adventure,Mysterious 3/tape	3	G	T	G	26.63	27.17
Adventure,Mysterious disk	3	D	D	G	11.75	13.51
Adventure,Mysterious 3/disk	3	D	D	G	29.50	33.93
Adventure,Mysterious 2/disk	3	D	D	G	20.00	23.00
Adventure Tip Sheets	52			G	.50	.50
Airbus	127	D	D	E	17.00	19.55
Ajedit	64	D	D	BH	43.43	49.95
Ajedit on smal-LDOS	67	D	D	BH	65.00	74.75
Alien Armada - tape	52	D	T	A	8.75	10.06
Alien Armada - disk	52	D	D	A	11.50	13.23
Alphabudget	174	D	T	H	12.50	14.38
Amateur Log	72	D	D	H	16.00	18.40
Amazin	4	D	T	G	5.50	6.33
Android Nim	14	D	T	G	8.75	10.06
Animation - tape	28	D	T	H	14.95	17.19
Animation - disk	28	D	D	H	17.95	20.64
Arachnid Plus - tape	113	D	T	A	12.50	14.38
Arachnid Plus - disk	113	D	D	A	15.00	17.25
Arranger I	194	A	D	U	20.00	23.00
Arranger II	194	D	D	U	39.00	44.85
Assembler 100	181	K	T	U	20.00	23.00
Assault - tape	122	D	T	A	12.50	14.38
Assault - disk	122	D	D	A	15.00	17.25
Asteroids - tape	48	D	T	A	8.75	10.06
Asteroids - disk	48	D	D	A	11.75	13.51
Astro Navigator	31	D	T	G	13.00	14.95
Astroball - tape	57	D	T	A	11.97	13.77
Astroball - disk	57	D	D	A	14.50	16.68
Astrolog	10	A	T	H	9.50	10.93
Astronomical Calendar	53	D	T	H	9.50	10.93
Backrest	166	DJ	D	U	70.00	80.50
Balloon Attack - tape	150	I	T	A	17.00	19.55
Balloon Attack - disk	150	I	D	A	18.00	20.70
Bar Chase	9	D	T	G	9.00	10.35
Basic Compiler-Accel	86	D	T	L	19.95	22.94
Basic Compiler-Accel 3 tape	86	D	T	L	43.43	49.95
Basic Compiler-Accel 3 disk	86	D	D	L	43.43	49.95
Basic Compiler-Accel 4 disk	86	D	D	L	52.13	59.95
Basic Insert	71	D	D	U	12.50	14.38
Basic Reference	22	B	D	U	50.00	57.50
Basic/S	190	D	D	L	33.00	37.95
Basketball - tape	31	D	T	A	9.50	10.93
Basketball - disk	31	D	D	A	12.50	14.38
Battle of Britain	10	D	T	G	13.50	15.53
BBCDISK	188	D	D	U	15.00	17.25
Beewary	15	D	T	G	8.75	10.06
Beep	187	J	D	L	43.00	49.45

PROGRAM	PAGE	MACH	MED	CAT	PRICE	VAT INC.
Binary/hex/oct/dec converter	4	D	T	H	7.35	8.45
Binder for List or Disks *	9				2.85	3.28
Biorhythm	5	D	T	H	7.50	8.63
Blackboard	52	D	T	M	8.75	10.06
Black Hole - tape	133	D	T	A	15.00	17.25
Black Hole - disk	133	D	D	A	17.50	20.13
Blackjack	161	K	T	G	4.00	4.60
Blackjackmaster - tape	62	D	T	M	18.40	21.16
Blackjackmaster - disk	62	A	D	M	22.10	25.42
Blink	30	A	D	U	14.80	17.02
Blink	30	B	D	U	29.00	33.35
Book Disk - Fast Basic	111	D	D	U	13.35	15.35
Book Disk - Basic F/B (Dem)	111	D	D	U	14.00	16.10
Book Disk - Basic F/B (Lib)	111	D	D	U	14.00	16.10
Books - Basic Faster & Better	63				19.90	19.90
Books - Disk Mysteries	19				15.52	15.52
Books - Basic Decoded	30				19.90	19.90
Books - Basic Disk I/O F & B	172				19.90	19.90
Books - Custom TRS-80	63				19.90	19.90
Books - TRSDOS 2.3 Decoded	118				19.90	19.90
Books - Level II Basic	74				8.25	8.25
Books - More TRS-80 Basic	74				9.75	9.75
Books - My Micro Speaks Basex	74				9.95	9.95
Books - TRS-80 Means Business	74				12.30	12.30
Books - Problems/Pocket Comp	74				7.50	7.50
Books - Succ.S/ware Small Cpr	74				6.95	6.95
Books - Using CP/M	75				11.25	11.25
Books - Programs/Beginners	75				8.95	8.95
Books - Data File Programming	75				11.25	11.25
Books - Fast Basic	98				11.25	11.25
Books - TRS-80 Colour Basic	99				8.25	8.25
Books - M/L Disk I/O & Mystrs	109				19.90	19.90
Books - Inside SU+	109				13.00	13.00
Books - Inside SU+ V.3	140				13.00	13.00
Books - SU+ Technical Man.	110				10.50	10.50
Books - SU+ Technical Man.V.3	140				10.50	10.50
Books - TRS-80 Mod.III Guide	125				9.75	9.75
Books - How to do it /TRS-80	157				19.90	19.90
Books - M.4 Tech Manual	157/181				28.00	28.00
Boxer - tape	148	D	T	G	7.50	8.63
Boxer - disk	148	D	D	G	9.50	10.93
Bright & Early	77	D	T	E	7.75	8.91
BSORT & MOD324	170	J	D	U	38.00	43.70
C *	108	D	D	L	110.00	126.50
C.C.Three	179	I	TD	HB	38.00	43.70
CCalc	182	K	T	BH	28.00	32.20
CIII	150	ID	D	U	15.00	17.25
Cassettes - blank C12 (10)	7				4.75	5.46
Cassettes - labels (20)	7				.95	1.09
Cassettes - labels,web (100)	140				2.50	2.88
CESIL - tape	154	D	T	L	15.00	17.25
CESIL - disk	154	D	D	L	17.00	19.55
CGP - tape	167	F	T	U	8.50	9.78
CGP - disk	167	F	D	U	11.00	12.65
Cheque Book	19	D	T	H	13.50	15.93
Chemical Formulae	74	D	T	E	9.50	10.93
Chopper - tape	149	I	T	A	17.00	19.55
Chopper - disk	149	I	D	A	18.50	20.70
City Encounters	72	D	T	W	14.95	17.19
Clash - tape	181	D	T	A	11.95	13.74

PROGRAM	PAGE	MACH	MED	CAT	PRICE	VAT INC.
Clash - disk	181	D	D	A	14.50	16.68
CMDFILE	189	J	D	U	23.00	26.45
CNVBasic	193	DJ	D	U	23.00	26.56
Colour Zap	89	I	D	U	29.00	33.35
ColPlot - tape	143	D	T	U	9.50	10.93
Colplot - disk	143	D	D	U	12.00	13.80
Company Director	21	D	T	G	14.95	17.19
Compendium No.1	161	K	T	H	12.00	13.80
Compendium No.2	161	K	T	U	12.00	13.80
Comput-A-Organ	10	D	T	G	5.95	6.84
Computer Pools	71	D	T	M	14.50	16.68
Concorde - tape	138	D	T	G	15.00	17.25
Concorde - disk	138	D	D	G	17.00	19.55
Constellation - tape	73	A	T	G	12.50	14.38
Constellation - disk	73	A	D	G	15.50	17.83
Conv/CPM	80	D	D	U	20.00	23.00
Convoy - tape	148	D	T	A	13.50	15.52
Convoy - disc	148	D	D	A	15.00	17.25
Copl6K	58	A	T	U	11.25	12.94
Copsys	5	D	T	U	11.25	12.94
CP/M 2 - Mod 4 *	163	J	D	L	149.00	171.35
CP/M 3 - Mod 4 (Tandy) *	170	J	D	L	99.95	114.94
Creole Lobstercatcher	33	D	T	G	8.75	10.06
Cribbage	30	D	T	G	12.50	14.38
Cribbage & Nudger	182	K	T	G	15.00	17.25
Critical Path Analysis	168	D	D	B	45.00	51.75
Crusaders	83	D	T	W	11.75	13.51
CSTAR	161	K	T	BH	15.00	17.25
Cube Hunt	28	A	T	G	9.00	10.35
Cyberchess - System disk	114	D	D	H	21.00	24.15
Cyberchess - Games disk	114	D	D	H	16.00	18.40
Cyborg - tape	99	D	T	A	12.50	14.38
Cyborg - disk	99	D	D	A	15.00	17.25
CZAP	160	K	T	U	15.00	17.25
DC-10	166	D	D	G	17.00	19.55
Dark Void	24	D	T	G	8.75	10.06
Darts	73	D	T	G	8.75	10.06
Data Base Management - tape	11	D	T	HB	25.00	28.75
Data Base Management - disk	11	D	D	HB	28.00	32.20
Data Separator	126				20.00	23.00
Data Writer *	91	D	D	B	69.00	79.35
DateMate	167	D	D	HB	16.00	18.40
DD & T	189	DJ	D	U	20.00	23.00
Defend - tape	68	D	T	A	13.00	14.95
Defend - disk	68	D	D	A	16.00	18.40
Delta Tau One	99	D	T	A	8.75	10.06
Demolish	150	I	T	A	8.75	10.06
Demon Seed - tape	149	I	T	A	17.00	19.55
Demon Seed - disk	149	I	D	A	18.50	20.70
Describe	190	DJ	D	U	23.00	26.45
Descriptive Statistics	51	D	T	E	13.40	15.41
Diary	174	K	T	M	13.00	14.95
Differential Equations	59	D	T	E	14.00	16.10
Dig Out - tape	134	D	T	A	12.50	14.38
Dig Out - disk	134	D	D	A	15.00	17.25
Direction Finder	15	D	T	M	13.40	15.41
Disassembler	5	D	T	U	9.00	10.35
Disassembler III	140	D	D	U	28.00	32.20
Diskaid	23	A	D	U	16.95	19.49
Disk Directory	22	D	D	U	17.50	20.13
DiskDisk	162	D	D	U	66.90	76.94
Disk Sleeves (plastic) - 8	198				1.00	1.15
Disks - regular each	198				1.60	1.84
Disks - regular 10	198				15.00	17.25
Dominoes - tape	7	A	T	G	7.95	9.14
Dominoes - disk	7	A	D	G	11.00	12.65
DosTamer	192	DJ	D	U	45.00	51.75
Doubler - Aerocomp	70				121.00	139.15
Draughts - tape	20	D	T	G	13.00	14.95
Draughts - disk	20	D	D	G	16.00	18.40
Dreamworld - tape	52	D	T	G	8.75	10.06
Dreamworld - disk	52	D	D	G	10.75	12.36
Driver	4	D	T	A	5.50	6.33
Driver Compiler	115	D	D	U	16.00	18.40
DSM	16/21	A	D	U	40.00	46.00
DSM	16/21	B	D	U	80.00	92.00
DSM	16/21	C	D	U	50.00	57.50
DSM-4	185	J	D	U	85.00	97.75
Duel	100	D	T	A	8.75	10.06
Duel-n-Droids - tape	12	D	T	A	9.50	10.93
Duel-n-Droids - disk	12	D	D	A	12.50	14.38
Duel in the Dark	73	D	T	G	9.50	10.93
Dungeon Escape - tape	113	D	T	G	11.50	13.23
Dungeon Escape - disk	113	D	D	G	14.00	16.10
Eatman	134	G	T	A	8.00	9.20
Edas 3.5.2 *	53	D	D	U	46.50	53.48
Edas IV *	54	D	D	U	72.00	82.80
Edit - tape	67	D	T	U	17.50	20.13
Edit - disk	67	D	D	U	22.50	25.88
Electric Accountant	45	D	D	BH	25.00	28.75
Electric Pencil (new) - tape	131	D	T	BH	59.00	67.85
Electric Pencil (new) - disk	131	D	D	BH	65.00	74.75
Elemental Maze	51	D	T	E	9.50	10.93
Emperor	15	D	T	W	13.50	15.53
Engine Driver	91	D	T	G	8.75	10.06
Enhanced Basic - tape	12	A	T	U	24.00	27.60
Enhanced Basic - disk	12	A	D	U	27.00	31.05
Enigma - tape	126	D	T	M	15.00	17.25
Enigma - disk	126	D	D	M	20.00	23.00
Epson Patch - tape	69	A	T	U	12.00	13.80
Epson Patch - disk	69	A	D	U	15.00	17.25
Everest Explorer - tape	135	D	T	G	8.75	10.06
Everest Explorer - disk	135	D	D	G	11.75	13.51
Fairytale Adventure - tape	45	D	T	G	8.75	10.06
Fairytale Adventure - disk	45	D	D	G	10.75	12.36
Fairytale Adv.Tip Sheets each	156				.50	.50
Family Tree - tape	80	D	T	H	15.00	17.25
Family Tree - disk	80	D	D	H	18.00	20.70

PROGRAM	PAGE	MACH	MED	CAT	PRICE	VAT INC.
Farmer Brown	24	A	T	E	6.50	7.48
FastBack	85	B	D	U	44.50	51.18
Fed II	69	D	D	U	37.00	42.55
Fed II -LS (6.0 version)	143	J	D	U	37.00	42.55
Fetch	68	A	D	U	13.50	15.53
Filter Package No.1	79	D	D	U	30.00	34.50
Filter Package No.2	163	D	D	U	30.00	34.50
File Handling for Disk	3	D	D	HB	25.00	28.75
File Handling for Tape	4	D	T	H	13.85	15.93
File Handling for Tape	4	G	T	H	13.85	15.93
Files	174	K	T	BH	15.00	17.25
Financial Analysis	16	D	D	B	40.00	46.00
Flight Plan - tape	77	D	T	M	15.00	17.25
Flight Plan - disk	77	D	D	M	18.00	20.70
Forest of Mordor	51	D	T	G	7.50	8.63
Forth - cassette	145	D	T	L	25.00	28.75
Fox and Hounds	28	D	T	G	6.50	7.48
French Vocabulary	53	A	T	E	14.95	17.19
Frenzy - tape	97	D	T	A	8.50	9.78
Frenzy - disk	97	D	D	A	11.00	12.65
Frog II - tape	90	A	T	A	8.50	9.78
Frog II - disk	90	A	D	A	11.00	12.65
Fury - tape	148	D	T	A	13.50	15.52
Fury - disk	148	D	D	A	15.00	17.25
Fury - tape	149	I	T	A	17.00	19.55
Fury - disk	149	I	D	A	18.50	21.28
Gammon Challenger - tape	47	D	T	G	8.75	10.06
Gammon Challenger - disk	47	D	D	G	11.75	13.51
Gauntlet - tape	140	D	T	A	12.50	14.38
Gauntlet - disk	140	D	D	A	15.00	17.25
Gencop	50	A	T	U	8.75	10.06
Genetics - tape	153	D	T	E	9.50	10.93
Genetics - disk	153	D	D	E	11.00	12.65
Gift Coupon - #5.00 value	152				5.00	5.00
Gift Coupon - #15.00 value	152				15.00	15.00
Golf	27	D	D	G	14.95	17.19
Gomoko	20	D	T	G	6.50	7.48
Grafic	153	G	T	U	9.50	10.93
Grand Prix - disk	121	D	D	A	8.65	9.95
Graph Plotter - tape	8	D	T	B	14.95	17.19
Graph Plotter - disk	8	D	D	B	18.00	20.70
Graphit	84	D	D	B	17.00	19.55
GSF	6	D	T	U	17.50	20.13
GSF	17	B	D	U	26.00	29.90
Hamurabi	7	D	T	G	6.50	7.48
Hannibal	24	D	T	W	13.50	15.53
HartForth	144	D	D	L	65.00	74.75
Hartforth	175	J	D	L	65.00	74.75
Help	91	C	D	U	21.00	24.15
Help - LS (6.0 version)	144	J	D	U	21.00	24.15
Help - Generator	144	C	D	U	40.00	46.00
Help - Generator LS (6.0 ver)	144	J	D	U	43.00	49.45
Help - Technical	144	C	D	U	25.00	28.75
Help - Technical LS (6.0 ver)	144	J	D	U	27.00	31.05
Help - Text source	144	C	D	U	21.00	24.15
Help - Text Source LS (6.0v)	144	J	D	U	23.00	26.45
Honest Joe	57	D	T	G	9.50	10.93
Horace - tape	58	D	T	H	14.00	16.10
Horace - disk	58	D	D	H	16.50	18.98
Horolog - tape	49	D	T	H	14.00	16.10
Horolog - disk	49	D	D	H	17.00	19.55
Hospital Homicide	159	D	T	G	8.00	9.20
HyperCross (XT)	177	DJ	D	M	59.00	67.85
HyperCross (All)	177/190	DJ	D	M	85.00	97.75
HyperZap	178	DJ	D	U	37.00	42.55
IBM to Tandy	173	D	D	M	35.00	40.25
IFC	185	D	D	U	25.00	28.75
Imon	20	A	T	U	23.10	26.57
Impakt - tape	43	D	T	U	28.00	32.20
Impakt - disk	43	D	D	U	28.00	32.20
Impakt 1	43	D	T	U	14.00	16.10
Impakt 2	43	D	T	U	14.00	16.10
Incomplete Records	25	D	D	B	150.00	172.50
Infinite Basic	7	A	T	U	25.95	29.84
Infinite Basic	7	C	T	U	29.00	33.35
Infinite Business	7	D	T	U	17.95	20.64
Infoscan	159	D	D	HB	29.90	34.39
Inside Track - tape	164	D	T	G	10.00	11.50
Inside Track - disk	164	D	D	G	12.50	14.38
Instant Sort/Search - tape	31	D	T	B	24.50	28.18
Instant Sort/Search - disk	31	D	D	B	27.50	31.62
Interdictor Pilot - tape	137	D	T	G	14.00	16.10
Interdictor Pilot - disk	137	D	D	G	16.50	18.98
Invaders - tape	9	D	T	A	13.00	14.95
Invaders - disk	9	D	D	A	16.00	18.40
Invaders from Space	121	G	T	A	8.00	9.20
JKLGRAFX	187	D	D	U	12.00	13.80
Job Costing	116	D	D	B	55.00	63.25
Jovian - tape	112	D	T	A	12.50	14.38
Jovian - disk	112	D	D	A	15.00	17.25
Jumbo - tape	87	D	T	G	15.00	17.25
Jumbo - disk	87	D	D	G	17.00	19.55
Junior Utility - tape	33	D	T	U	9.50	10.93
Junior Utility - disk	33	D	D	U	12.00	13.80
Keyboard Mask - tape	56	D	T	U	9.50	10.93
Keyboard Mask - disk	56	D	D	U	12.50	14.38
KFS-80	50	A	D	U	48.00	55.20
KFS-80	50	B	D	U	85.00	97.75
King Arthur	49	D	T	W	9.50	10.93
Knight - de Luxe	67	A	D	G	11.75	13.51
Knights Tour	25	D	T	G	6.50	7.48
Kubik	56	D	T	G	6.50	7.48
Label Maker	90	D	D	H	26.00	29.90
Labeller	58	A	D	H	17.95	20.64
Labyrynth	15	D	T	G	9.50	10.93
LDOS *	36-43	D	D	UL	50.00	57.50
LDOS - Fix Disk	108	D	D	U	12.00	13.80
LDOS - Hard Disk Driver	122	C	D	U	35.00	40.25

PROGRAM	PAGE	MACH	MED	CAT	PRICE	VAT INC.
LDOS - Reference Card	125				5.00	5.00
LS also see under program name						
LS-DiskDisk	174	J	D	U	70.00	80.50
LS-LED	173	J	D	U	35.00	40.25
LS-QFB/COMP	173	J	D	U	35.00	40.25
LS-Utility	183	J	D	U	40.00	46.00
LED	83	D	D	U	30.00	34.50
Level I in Level II	4	A	T	L	9.85	11.33
Liberator - tape	139	D	T	A	12.50	14.38
Liberator - disk	139	D	D	A	15.00	17.25
Light Pen	119	D			14.00	16.10
Linear Regression	7	D	T	E	5.95	6.84
Little Brother	188	J	D	B	86.00	98.90
Little Brother Main.Util.	194	J	D	B	60.00	69.00
Lost Colony - tape	69	D	T	G	11.97	13.77
Lost Colony - disk	69	D	D	G	14.50	16.68
MDisk - tape	180	I	T	U	21.00	24.15
MDisk - disk	180	I	D	U	23.00	26.45
Mach2	187	D	D	U	20.00	23.00
Machine Code to Basic	26	A	T	U	9.95	11.14
Mah-Jong	112	D	T	G	11.75	13.51
Mailing List (new)	8	D	D	B	29.00	33.35
Mailit	73	D	D	BH	29.00	33.35
Marquee	80	D	T	M	11.75	13.51
Martian Patrol - tape	121	D	T	A	6.04	6.95
Martian Patrol - disk	121	D	D	A	8.65	9.95
Master Mechanic	143	D	D	U	24.00	27.60
Maths Speed Test	71	D	T	E	8.75	10.06
Matrix Manipulator	8	D	T	HB	28.00	32.20
Mayfly - tape	167	D	T	M	8.75	10.06
Mayfly - disk	167	D	D	M	11.25	12.94
Medieval Magic - tape	79	D	T	G	7.95	9.14
Medieval Magic - disk	79	D	D	G	10.95	12.59
Memdisk	75	D	D	U	28.00	32.20
Meteor	131	G	T	A	8.00	9.20
Miles per Gallon	71	D	D	H	16.00	18.40
MIllipede	151	G	T	A	7.50	8.63
Minefield	10	D	T	G	6.50	7.48
Mini Utility	67	D	T	U	6.50	7.48
Mini Utility No. 2	81	D	T	U	6.50	7.48
Mini Utility No. 3	110	A	T	U	6.50	7.48
MLIB	188	DJ	D	U	23.00	26.45
Modem 80	107	D	D	C	26.50	30.48
Modem 80	107	J	D	C	49.00	56.35
Monitor	79	D	D	U	21.00	24.15
Monitor 3	3	D	T	U	23.10	26.57
Monitor 3 (new version for C/G)	3	G	T	U	17.39	20.00
Monitor 5 - tape	3/115	D	T	U	28.10	32.32
Monitor 5 - disk	3/115	D	DJ	U	30.00	34.50
Money Manager	77	D	D	H	21.00	24.15
Moon Rover - tape	181	D	T	A	9.50	10.93
Moon Rover - disk	181	D	D	A	12.00	13.80
Morse Code	14	A	T	H	9.50	10.93
Morse Code Comm. - tape	20	D	T	H	14.95	17.19
Morse Code Comm. - disk	20	D	D	H	17.95	20.64
MSP-01	143	D	D	U	24.95	28.69
MSP-02	189	D	D	U	23.00	26.45
Multiple Choice Questions	46	D	D	E	19.00	21.85
Music Master - tape	19	D	T	M	14.95	17.19
Music Master - disk	19	D	D	M	17.95	20.64
Nametager	183	D	D	M	42.00	48.30
Napoleon	62	D	T	W	11.75	13.51
Newdos + (35,40,77 track)	6	A	D	UL	49.00	56.35
Newkey	167	A	T	U	5.50	6.33
Nuclear War	27	D	T	G	6.50	7.48
Nudger & Cribbage	182	K	T	G	15.00	17.25
Object Code Relocator	5	D	T	U	5.95	6.84
Outhouse - tape	150	I	T	A	17.00	19.55
Outhouse - disk	150	I	D	A	18.50	21.28
Overdrive	184	J	D	U	75.00	86.25
PAI	98	D	D	B	55.00	63.25
PDS	80	D	D	U	24.95	28.69
Page File	76	D	D	B	19.50	22.43
Page Plus - tape	180	I	T	U	21.00	24.15
Page Plus - disk	180	I	D	U	23.00	26.45
Paraform	83	D	D	U	16.50	18.98
Pascal	29/156	D	D	L	70.00	80.50
Pascal Tutorial	175	D		E	25.00	25.00
Pascal (Compiler + Tutorial	175	D	D	LE	85.00	94.00
Pelmanism	47	D	T	G	9.00	10.35
Penetrator - tape	89	D	T	A	8.65	9.95
Penetrator - disk	89	D	D	A	11.26	14.95
Pigskin - tape	46	D	T	G	9.50	12.50
Pigskin - disk	46	D	D	G	12.50	14.38
Pilot	47	A	T	L	12.00	13.80
Pinball - tape	18	D	T	A	13.00	14.95
Pinball - disk	18	D	D	A	16.00	18.40
Plant Selector	110	D	D	M	40.00	46.00
Poolcast	101	D	D	H	18.00	20.70
Pools	20	D	T	H	13.50	15.53
Porta-Calc *	169	K	T	BH	52.00	59.80
Porta-Max *	169	K	T	U	34.00	39.10
Porta-Stat *	169	K	T	BH	34.00	39.10
PowerDot II	120	D	D	H	45.00	51.75
PowerDraw	105	D	D	H	25.00	28.75
PowerMail Plus	141	B	D	B	82.00	94.30
PowerMail Plus	141	D	D	B	82.20	94.30
PowerMail Plus	141	J	D	B	82.20	94.30
PowerScript	170	DJ	D	BH	35.00	40.25
Probe	34	D	D	H	16.95	19.49
Pro-Ade	184	J	D	U	31.96	36.75
Pro-Cat	187	J	D	U	27.30	31.40
ProCess	189	J	D	U	23.00	26.45
ProCreate	143	J	D	U	72.00	82.80
Prodata	8	D	D	HB	30.00	34.50
ProDD & T	189	J	D	U	20.00	23.00
ProDuce III	143	J	D	U	28.00	32.20
ProESP	189	J	D	U	23.00	26.45
ProGeny	143	J	D	U	24.95	28.69
Pro-IFC	185	J	D	U	25.00	28.75
Pro-LC	170	J	D	L	110.00	126.50
Pro-Mach2	187	J	D	U	36.00	41.40
Pronto	198	J	D	U	46.00	52.90
ProPaDS	143	J	D	U	24.95	28.69
Protext	13	A	D	HB	38.50	44.28
ProXFTS	197	J	D	C	20.00	23.00
Prozap	22	D	D	U	19.95	22.94
ProZshell	190	J	D	U	20.00	23.00
Pull Down Menus	196	J	D	U	19.95	22.94
Purchase Ledger	13	D	T	B	19.00	21.85
QASM - tape	151	D	T	U	13.50	15.52
QASM - disk	151	D	D	U	15.00	17.25
QRA Locator	26	D	T	H	8.75	10.06
Quad - tape	31	D	T	G	9.50	10.93
Quad - disk	31	D	D	G	12.50	14.38
Quagmire	50	D	T	G	8.75	10.06
Quick-pro Plus *	96	D	D	L	106.00	121.90
Quick-pro Plus *	96	B	D	L	108.00	124.20
Quizmaster	162	D	D	H	26.35	30.30
Quizmaster - Geography	162	D	D	H	12.85	14.78
Quizmaster - Maths	162	D	D	H	12.85	14.78
Race - tape	8	D	T	G	8.50	9.78
Race - disk	8	D	D	G	11.50	13.23
Racing Driver	68	I	T	A	8.75	10.06
Racing Driver	68	G	T	A	8.75	10.06
Random Dungeon Generator	50	D	T	W	14.95	17.19
Regress	17	D	D	E	15.75	18.11
Remodal/Proload	6	D	T	U	24.00	27.60
Renumber Basic	6	A	T	U	9.85	11.33
Roulette	90	D	T	G	8.50	9.78
RomBack	181	I	T	U	13.00	14.95
SAID	188	DJ	D	U	23.00	26.45
Sales Ledger 1	78	A	D	B	90.00	103.50
Sales Ledger 1	78	C	D	B	120.00	138.00
Sam Loyd	53	D	T	G	8.50	9.78
Sargon II - tape	6	D	T	G	22.10	25.42
Sargon II - disk	6	A	D	G	25.75	29.61
Sauce	59	B	D	U	25.00	28.75
Sauce for CP/M	80	B	D	U	25.00	28.75
Structured Basic Appendage	195	D	D	L	55.00	63.25
SECS	76	I	T	U	22.00	25.30
Sea Wolf - tape	84	D	T	A	8.75	10.06
Sea Wolf - disk	84	D	D	A	11.00	12.65
Securipack	133	D	D	U	15.00	17.25
Serpent - tape	51	D	T	A	8.75	10.06
Serpent - disk	51	D	D	A	11.75	13.51
Share Dividends	11	A	T	H	14.95	17.19
Share Portfolio	5	A	T	H	24.95	28.69
Share Portfolio & Analysis	197	J	D	H	50.00	57.50
Sheepdog	53	D	T	G	7.65	8.80
Showdown - tape	52	D	T	A	8.75	10.06
Showdown - disk	52	D	D	A	11.75	13.51
Shuttle II - tape	48	D	T	G	14.00	16.10
Shuttle II - disk	48	D	D	G	16.80	19.32
Sigmon	76	I	T	U	22.00	25.30
Simplex	181	I	T	U	23.00	26.45
SIR	129/156	D	D	BH	52.00	59.80
smal-LDOS	85	D	D	UL	28.00	32.20
Small Forth	114	D	D	L	18.00	20.70
Smart Terminal - tape	14	FC	D	C	22.00	25.30
Smart Terminal - disk	14	FCJ	D	C	24.50	28.18
SnapInvoice	186	DJ	D	B	60.00	69.00
Sole	80	A	D	U	11.96	13.75
Sound - tape	18	A	T	H	8.50	9.78
Sound - disk	18	A	D	H	11.50	13.23
Space Attack - tape	121	D	T	A	6.04	6.95
Space Attack - disk	121	D	D	A	8.65	9.95
Space Eye - tape	47	D	T	A	8.75	10.06
Space Eye - disk	47	D	D	A	11.75	13.51
Space Fighter	6	D	T	A	5.85	6.73
Space Fighter	6	G	T	A	5.85	6.73
Space Fighter	68	I	T	A	8.75	10.06
Space Governor	100	D	T	G	8.75	10.06
Space Rocks - tape	52	D	T	A	11.97	13.77
Space Rocks - disk	52	D	D	A	14.50	16.68
Speedy	56	A	T	U	7.65	8.80
Spelchek	193	D	D	U	52.00	59.80
Star Fire	29	D	T	G	5.50	6.33
Star Trek (new)	19	D	T	G	9.50	10.93
Stock Control - tape	14	D	T	B	17.00	19.55
Stock Control - disk	14	D	D	B	20.00	23.00
Stock Market Game	8	D	T	G	9.50	10.93
Stopper - tape	105	A	T	U	15.00	17.25
Stopper - disk	105	A	D	U	17.50	20.13
Strike Force - tape	89	D	T	A	8.65	9.95
Strike Force - disk	89	D	D	A	11.26	12.95
Stronghold - tape	149	D	T	A	13.50	15.52
Stronghold - disk	149	D	D	A	15.00	17.25
Struc. Basic Translator	15/75	D	D	L	24.00	27.60
Submarine Chase	7	D	T	G	5.50	6.32
Supa-Trek	9	A	D	G	14.95	17.19
Super Directory	130	D	D	U	29.95	34.44
Superkey - tape	124	D	T	U	7.65	8.80
Superkey - disk	124	D	D	U	10.00	11.50
Superlife	25	D	T	G	9.50	10.93
Superlog 3	193	D	D	U	95.00	109.25
Superlog 4	193	J	D	U	95.00	109.25
Super Scripsit Driver - any 1	122	DJ	D	U	19.95	22.94
Super Stats	180	I	T	HB	22.00	25.30
Super Utility + Ver.3	34	D	D	U	57.00	65.55
Super Utility + Model 4	167	J	D	U	57.00	65.55
Super Utility + Upgrade	34	D	D	U	30.00	34.50

PROGRAM	PAGE	MACH	MED	CAT	PRICE	VAT INC.
Super Utility + Special Edit.	139	D	D	U	275.00	316.25
Suppressor Dist. Unit *	88				28.00	32.20
Sysdump	16	A	T	U	8.25	9.49
System Diagnostic - tape	60	D	T	U	34.74	39.95
System Diagnostic - disk	60	DJ	D	U	36.91	42.45
System Savers	16	D	T	U	11.25	12.94
System Tape Copier	121	G	T	U	7.00	8.05
T.B.A	104	D	D	L	50.00	57.50
T.B.A - LS (6.0 version)	143	J	D	L	58.00	66.70
Tables	24	D	T	E	6.50	7.48
Tandy to IBM	173	D	D	U	35.00	40.25
Tarot	48	D	T	M	9.50	10.93
Telephone Index	16	D	D	H	19.00	21.85
Temple of Bast - tape	113	D	T	G	8.75	10.06
Temple of Bast - disk	113	D	D	G	11.75	13.51
Tenpin - tape	52	D	T	A	9.50	10.93
Tenpin - disk	52	D	D	A	12.50	14.38
Texpro	56	D	T	BH	18.00	20.70
Text Merge	166	DJ	D	B	37.95	43.64
Time Bandit - tape	148	D	T	A	13.50	15.52
Time Bandit - disk	148	D	D	A	15.00	17.25
Toolbelt	173	J	D	U	37.00	42.55
ToolBox	141	D	D	U	37.00	42.55
Touch Typing Course:						
- First Lesson	23	A	T	EH	10.00	11.50
- Subsequent	23	A	T	EH	6.50	7.48
- Entire Course *	23	A	T	EH	45.00	51.75
- Entire Course	23	A	D	EH	47.50	54.63
Tracker	26	A	D	U	22.50	25.88
Trakcess	104	A	D	U	17.50	20.13
Treasure Trove - tape	50	D	T	G	8.75	10.06
Treasure Trove - disk	50	D	D	G	11.75	13.51
Triumph of Rome	72	D	T	W	11.75	13.51
Tsave	50	D	T	U	4.95	5.69
Typitall - Demo	152,175	DJ	D	BH	38.00	43.70
Typitall - Plain	152,175	DJ	D	BH	75.00	86.25
Typitall - W/Proofreader	152,175	DJ	D	BH	105.00	120.75
Ultra Trek	163	D	D	G	13.00	14.95
Underworld - tape	95	D	T	G	8.50	9.78
Underworld - disk	95	D	D	G	11.00	12.65
Utilities Package 1	17	B	D	U	70.00	80.50
Utilities Package 2	17	B	D	U	70.00	80.50
Utility Disk No.1 (LSI)	162	D	D	U	26.35	30.30
VAT Register (inc. D)	10	D	T	B	20.00	23.00
Visicalc * (enhanced)	33	B	D	BH	217.35	249.95
Visicalc * (enhanced)	33	C	D	BH	130.39	149.95
Vision Load	12	D	T	U	11.50	13.23
WD Series 1 Hard Disk Driver	174	J	D	U	75.00	86.25
Wild West - tape	121	D	T	A	6.04	6.95
Wild West - disk	121	D	D	A	8.65	9.95
William the Conqueror	97	D	T	W	11.75	13.51
Wonderland Adventure - tape	52	D	T	G	8.75	10.06
Wonderland Adventure - disk	52	D	D	G	10.75	12.36
Wumpus	4	D	T	G	5.50	6.32
Yi-Ching	29	D	T	M	9.50	10.93
X-PTS	197	D	D	C	20.00	23.00
Z-Cat (Pro-Zcat)	187	DJ	D	U	20.00	23.00
Z-Graph	161	D	D	H	20.00	23.00
Z-Graph (Pro-Zgraph)	161	J	D	H	20.00	23.00
Zshell	176	D	D	U	20.00	23.00

CODES

Machines:

A = Model I TRS-80,VG,Genie I & Genie II
B = Model II TRS-80 only
C = Model III TRS-80 & Model 4*
D = Model I,III,4* TRS-80;VG,I & II Genie
E = Genie VG,I & II
F = Model I TRS-80 - not Genies
G = Colour Genie
H = Model II & III TRS-80
I = TRS-80 Colour (extended Basic)
J = Model 4 TRS-80 (in Model 4 mode)
K = Model 100

* Model 4 in Model III mode TRS-80

Categories:

A = Arcade games
B = Business
C = Communications
E = Educational
G = Games
H = Home
L = Languages
M = Miscellaneous
T = Technical
U = Utility
W = Wargame

Note: Categories are rough only and may well overlap. Arcade for instance may simply mean very good graphics.

The above prices do not include postage and packing. Orders for single cassettes or disks should be accompanied by 75p to cover First Class postage and packing. Any adjustment required (such as those with more extensive documentation) will be made by Credit or Debit Note. Where any item has *, it is a heavy item and the shipping charge is £2.50. Our responsibility ends on obtaining from the Post Office a Certificate of Receipt. It is therefore for the customer to decide whether or not he wishes to have his shipment sent by Registered Post or Receipted Parcel. In the former case he should add 90p, in the latter, 60p. To save the possibility of delay, we reserve the right to implement either Registration or Receipted parcel if we feel that the value of the shipment is such that it warrants it.

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