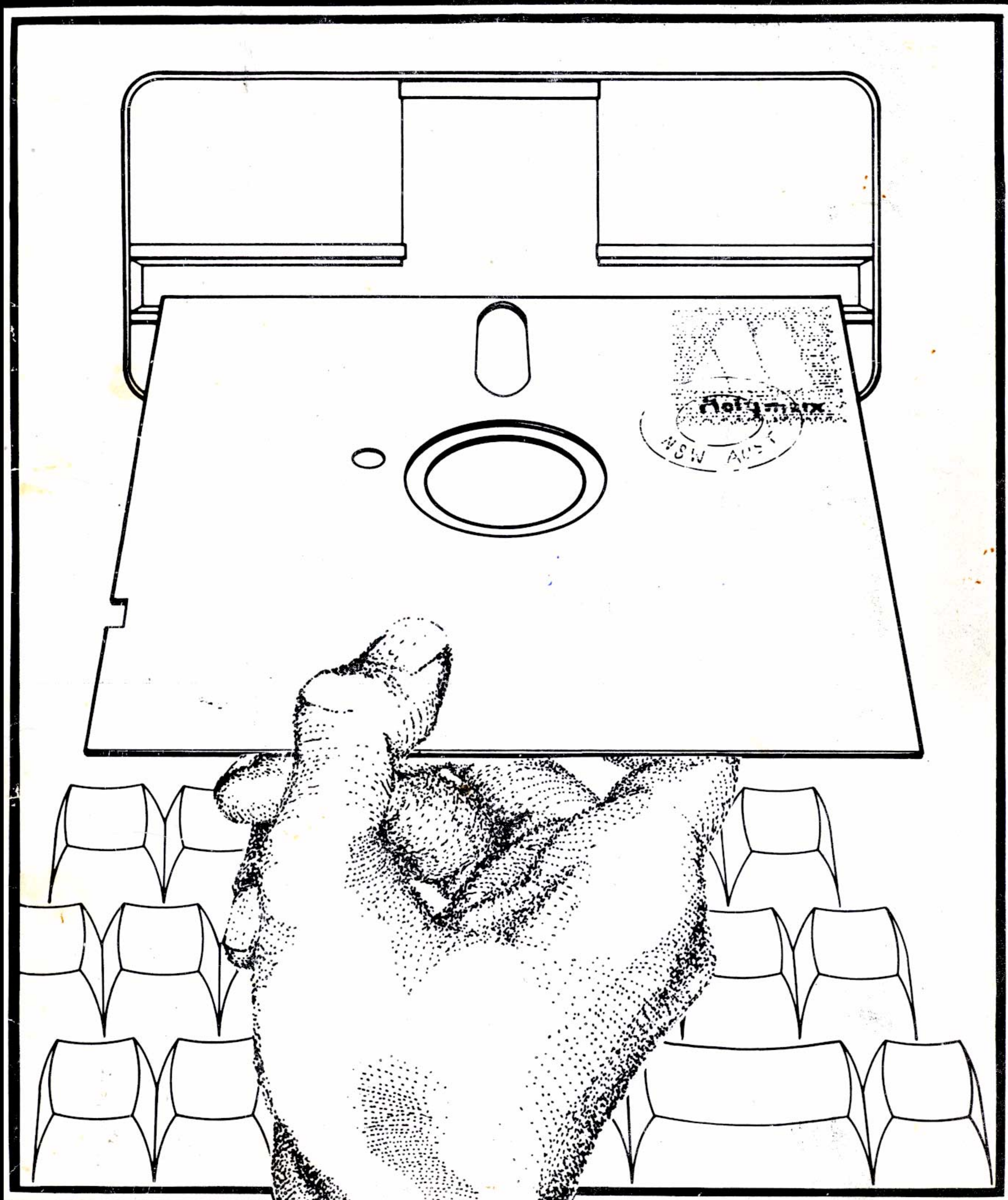


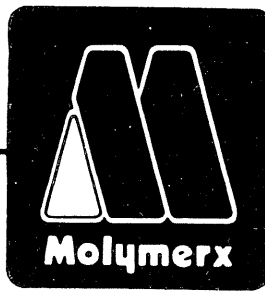
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For TRS-80,
SYSTEM 80 and other
popular computers



Dear Computer User,

Thank you for subscribing to our catalogue.

The compilation of this publication represents months of painstaking work. Our objective of a "one-stop software source" for TRS-80 and SYSTEM 80 users led to an amalgamation of many of the best programs available on the North American and European markets.

To help you make a well informed purchasing decision we have included a comprehensive description of every product we sell. Not only does this serve as a useful reference, it guarantees that you receive the features you require.

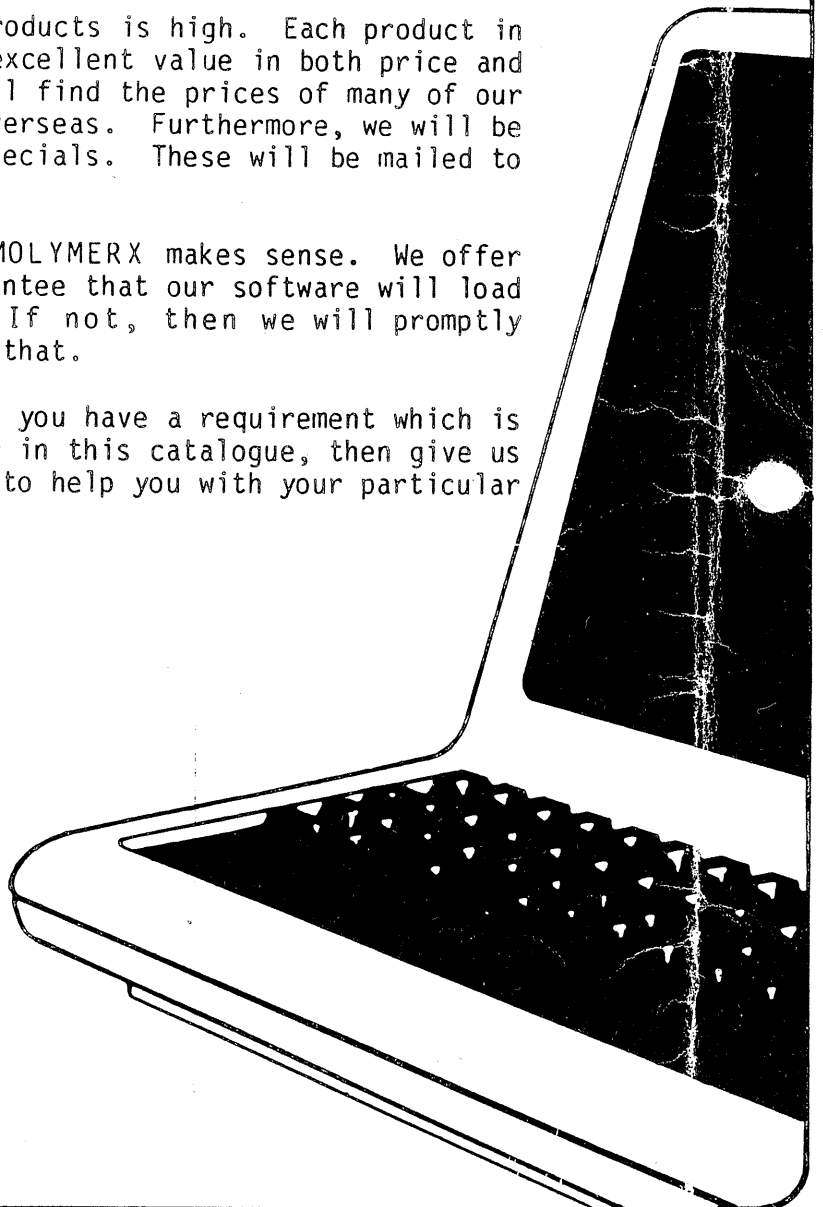
The overall standard of our products is high. Each product in this catalogue we feel offers excellent value in both price and performance. Indeed, you will find the prices of many of our products comparable to those overseas. Furthermore, we will be offering a series of regular specials. These will be mailed to you with each catalogue update.

Buying your software from MOLYMERX makes sense. We offer immediate despatch, and guarantee that our software will load and run to specification. If not, then we will promptly replace it. It is as simple as that.

We value your suggestions. If you have a requirement which is not met by any specific program in this catalogue, then give us a call. We will do our best to help you with your particular problem.

Yours sincerely,

ALISTAIR CAMPION
(MANAGING DIRECTOR)



** HARDWARE SALE **

MOLYMERX has been tempted into offering computer hardware for sale by our
very favourable impression of the New

 ** COLOUR GENIE COMPUTER **

With this catalogue update you will receive a brochure describing the attributes of
the COLOUR GENIE

Our normal policy of heavy discounting of mail-order products is not allowed by the
New Zealand agents for EACA so we are offering

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of FREE SOFTWARE

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This includes RACING DRIVER , SPACE INVADERS , and a data-base
manager FILE HANDLING for the COLOUR GENIE

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MOLYMERX IS NOW PRODUCING A SPECIAL COLOUR CATALOGUE OF
SOFTWARE FOR

COLOUR GENIE

TRS 80 COCO

The BBC MICRO

This catalogue sells for \$3.00 and will follow our practice of offering regular
updates at no charge.

With world-wide rights to some 800 separate programs, MOLYMERX is translating
only the most interesting or useful TRS/SYS 80 programs over to the new colour
machines.

MOLYMERX is interested in hearing from programmers of proven competence to
undertake translations to these machines. A percentage of royalties will be offered
to programmers able to take advantage of the special features of the various
machines. We want only the best people here and we will be extremely choosy but
if you think you may fit our requirements please get in touch.

While on the subject, it may be as well to reiterate that with our publishing
contacts in England, Australia and America, programs of an innovative nature
published by us can give an author world-wide exposure and can be very profitable.
Our selection criteria is stringent but top programs for the range of Micros that
MOLYMERX supports can earn an author very good royalties.

**** HARDWARE SALES ****

MOLYMERX is offering to our customers the following items of hardware.

In each case, the equipment is virtually new and unused and is offered with a tempting array of software. The computers we are selling are redundant for our use though initially purchased for use by us.

**** MODEL 16 ****

This is a twin dual-sided drive 128K computer running at 6 MHz and utilising the Motorola 68000 chip (a 16/32 bit chip) and a Z 80 chip for I/O .

In Z 80 mode it is capable of running the enormous range of software available for the Model II and with this computer we are giving away approximately \$5000.00 of software including :

TRSDOS 4.0 , DOSPLUS II and TRSDOS 2.0B as well as UNIX (multi-tasking run-time system)

Also, SCRIPTSIT 2.0,, PROFILE +, PROFILE, THE LAST ONE (the heavily advertised program generator),QUIKPRO II +, a 68000 editor-assembler with all manuals and some business accounting software.

The Model 16 is the top of the line Radio shack business computer and we are offering it about \$2000 less than David Reids were to import it at
\$14,500.00

A TRS 80 MODEL I

again almost unused and can be of any spec.from the basic 48K machine with expander at \$950.00 to a full system with twin 40 Track drives ,Monitor and any software from our catalogue to a value of \$450.00 at
\$2600.00

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This month we have chosen to feature as specials in the

MOLYMERX CATALOGUE

programs which are "sleepers"; that is, software which in our opinion deserve sales greater than they have actually received. Often programs are, for example, unimaginatively named by their authors or perhaps described by us with the wrong slant to make them sound attractive and interesting to you.

So, we offer you the following software at good price reductions in the hope that we can get more of you looking at programs that you may not normally consider worth buying.

QUIKPRO-PLUS is the most sophisticated of the program generators. A program like Quikpro virtually gives you access to a catalogue of software. It is fully described on Page 1.6 and reduced by \$40.00 to \$149.95

ENGINE DRIVER is a complicated but very addictive fun game. If the average Arcade expert masters this one without a lot of hours practice we'll be very surprised.

On page 6.5NZ and

Offered at \$19.95

FROGGO is a well known arcade game. This is a good copy and makes the most of the TR-80's low res graphics.

On page 6.4 and

Offered at \$19.95

Miles Per Gallon is a program designed for complete vehicle maintainance. It has application to the fleet manager as well as the individual car owner

On page 11.1 and

Offered at \$39.95

SHARE ANALYSIS is a program not only for the professional but for anyone interested in the share market. It is well written software with a wide application. Described on P.5.3 and

Reduced to \$49.95

Finally I would like to recommend a program new to our catalogue but which is going to be a big hit overseas.

THE INSIDE TRACK

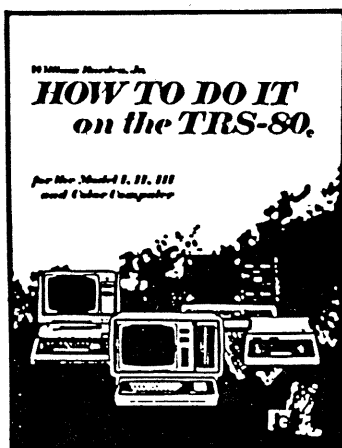
is written by an Aucklander, Ray Wilkinson, and dedicated to any one who wants to have his computer show its paces at parties or family or group gatherings.

The extremely clever machine coding makes each horse race as close to the unpredictable but, with hindsight, near inevitable results of live gee-gee action as it is possible to get. Race results are not random and not merely weighted to the pre-race selection hints but arranged such that if a certain race is re-run the place-getting horses may well be different.

The graphics are amusing and this is one of the very few programs I have ever seen arouse a gathering to cheering, and the kind of excitement that can be seen at real sporting events.

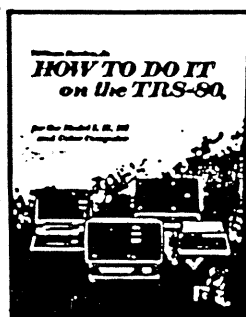
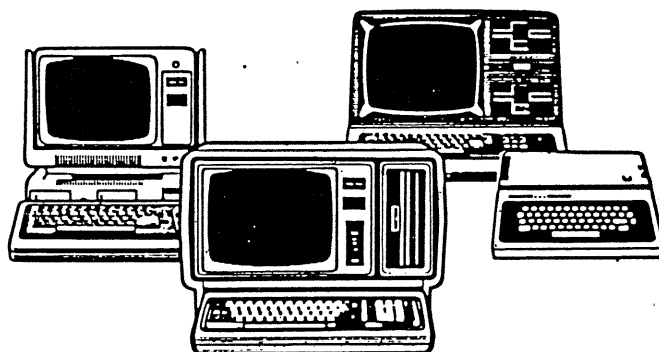
After some difficulty in categorising, the program is described under SIMULATIONS on P.7.2NZ

JG Computer Books

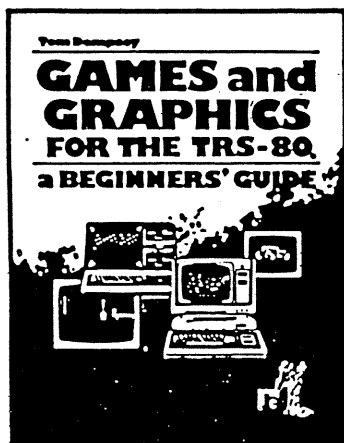


HOW TO DO IT ON THE TRS-80.

By WILLIAM BARDEN, JR.



*for the Model I, II, III
and Color Computer*



Tom Dempsey

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For Models I & III

For Models I & III

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**If it's from
IT'S JUST GREAT!**



Dear Subscriber,

Thank you for your support over the last few months.

We expect our catalogue to be updated approximately six-weekly from now on. Some of the pages enclosed will replace pages in your catalogue; others are additional. The catalogue is intended to be updated with pages being placed in the section indicated by the first number and in the sequence indicated by the second number.

Pages with a further suffix of "NZ" are programs which MOLYMERX has decided to release in New Zealand before they are available to the Australian company. The majority of preparation of the catalogue is carried out in Australia so it is possible some of these programs will be duplicated in later updates.

Interest has been expressed as to how MOLYMERX came about and where we are going so I thought I would take this opportunity to give a brief summary :

MOLYMERX is based in New Zealand with a sister company in Australia. Initially it was intended that Australia would be the major market but since I have been back in New Zealand I have been most impressed not only by the numbers of SYSTEM-80/TRS-80 computers here, but also by the level of knowledge of the users (which in my opinion far exceeds the expertise of the average TRS-80 user in the U.K. or Australia) and we have decided to make our software available here.

All reproduction is carried out in-house under licence from our overseas suppliers. This means that not only can we supply the latest versions of overseas programs but everything is in stock and available immediately. As far as we can work out, MOLYMERX is amongst the largest suppliers of TRS-80 software in the world.

In future we intend to extend our support to the IBM-PC and the BBC Micro and at this stage a lot of our existing software is being transferred over to either or both of these computers.

UPDATES

On this page each month we will give a list of programs which have been updated.

Our policy regarding updates is that such updates correcting bugs will always be provided totally free of charge. (As our software is tested very extensively both overseas and by ourselves, we expect the necessity for these correction to be very minimal.) Often programs are tinkered with by the authors to add features or to make cosmetic changes and updated versions of these can be obtained by providing proof of purchase of the original program from us and returning the original with \$7.50 for tape upgrades and \$12.50 for disk.

Some programs are totally rewritten or are new versions. We will provide the new version on return of the original at 60% of the price of the new version plus media cost.

For regular customers and more complicated or expensive software (eg ENBASE, HEXMAN, AJEDIT etc) we will sell the manual at \$20.00 offsettable against the program price. If after inspection of the documentation you decide the program is not for you we will refund the manual cost PROVIDED IT IS RETURNED COMPLETELY AS NEW.

Steve Smith



This June update has a number of excellent new products.

DOSPLUS 3.5

A few months ago I would have advised anyone wanting the most powerful DOS to buy LDOS. Now, DOSPLUS 3.5 has been released and there is simply no DOS available to compare in features and ease of use. Many utility programs are included and best of all, the price is very favourable.

ENBASE - a true relational database.-

Essentially one can input Data in any order and later retrieve the data in any relationship. (If you have ever set up a database up and 2 months later wanted to alter the key fields or have different reports generated you will appreciate this feature above all else.) There is no other product on the market with the power and features of this database. Priced at two hundred dollars less than PROFILE 3 + it outguns any other database available. Programmers interested in writing application software using ENBASE can contact MOLYMERX for royalty arrangements.

small LDOS -

This is a DOS written by LOGICAL specifically for the System 80. Essentially a sub-set of LDOS, a purchaser may later upgrade to LDOS at very good rates.

CRAYON DELUXE -

One of the most fascinating programs to come my way. I have enclosed just some of the printouts produced while playing with CRAYON DELUXE. The author, Jerry Goodwin in Florida has pledged the release of many different fonts and if you own a dot addressable printer this is a program you simply must have in your library.

ACCEL 4 -

A completely new program with not only almost all BASIC commands now compiled but with a run time overhead of only a few bytes. This startling improvement means that apart from some 128 bytes, all user memory is available to the Object program. It is a breeze to use and can be called from disk basic with a "CMD "I", "ACCEL". The disk contains a copy of ACCEL 3 as well.

QUICKPRO +

We will now supply only the "+" version which has been completely rewritten and has significant advantages in calculating ability.

PLANT SELECTOR -

is a must have program for anyone involved professionally in Horticulture or for the serious gardener. (We will sell printouts from this program tailored to your specific planting requirements. Contact MOLYMERX for details)

Three of our Arcade Release - FRENZY, FROGGO and SHEEPDOG are delightful alternatives to the usual rash of Space Games. FRENZY is particularly addictive while SHEEPDOG and FROG will stretch your coordination to the limits. The Graphics in DUEL are excellent while ENGINE DRIVER is not only original but difficult. DELTA TAU ONE is a goodie while UNDERWORLD lets you be a baddie.

UPGRADED PROGRAMS

PASCAL -

We now have version 5.3.

JUMBO -

The manual for this marvellous simulation has now been totally rewritten for Australian and New Zealand flights. Wind is now allowed for, the program is generally speeded up and one cannot take a break until you are flying straight and level. In addition previous purchasers of one version of JUMBO may buy the other two versions, namely U.K. and U.S.A. for half price (without the manual) Boeing 747 pilots have commented on the realism of response of this program and if you only buy one program from us, make it this one!

SYSTEM DIAGNOSTIC -

Model I version has been updated. The Model I version now handles single and double density; 35, 40 or 80 track drives. The double density Mod.1 version has provision for single and double density Bootstrap tracks. The Model III version has been completely rewritten and handles single and double density 35, 40 and 80 track and double sided drives. Improvements for both models have been made to the RS-232 Tests and to the Continuous test modes.

MYSTERIOUS ADVENTURES -

All these testing and intriguing adventures from Brian Howarth now have upgraded versions. There is a new adventure series EPIC HERO 1,2 and 3 which, while being as interesting as Brian Howarth's innovative offerings, are sufficiently different for us to stock.

Animate -

Both Tape and Disk versions are changed. Tape now switches off automatically and the disk version now display the time allocated to a frame as well as the current frame number.

=====

MOLYMERX has been appointed sole representative of POWERSOFT and ABC (LAZYWRITER) in Australasia and we expect to announce availability of software from these companies next month. POWERSOFT are without a doubt writing the most innovative and powerful software available to the TRS-80/Sys.80 user and SUPER UTIL should be in every programmer's library. (Alas these products (together with LDOS) are unavailable for reproduction outside the parent company in the States. All our other software can be kept priced equivalent with prices in their home markets but importing (as a lot of you are aware) is expensive.)

=====

We have left in stock a few of the informative IGJ books. The first of these, DISK and OTHER MYSTERIES was an indispensable part of the '80 users Library and the latest DISK I/O and OTHER MYSTERIES maintains the tradition.

With Compliments

This catalogue update was delayed by the necessity of rearranging distribution of MOLYMERX software in Australia. Sales there had surpassed our initial expectations and plans to such an extent that MOLYMERX PTY was having difficulty in adequately servicing orders. Rather than expand too rapidly we decided to distribute through a company with 5 years experience in the Australian TRS 80/SYS 80 market. After several months I am glad to say that MICRO 80 in Adelaide have put a most professional sheen on sales of MOLYMERX software in that country.

This arrangement has spin-offs of great benefit to you, our valued customers in this country.

MICRO 80 are one of the most experienced TRS/SYS 80 groups in the world. They publish MICRO 80, a magazine that has expanded from a few cyclostyled sheets of news and info in 1979 on this new beast the TRS 80 home computer, to an extremely well produced monthly full of well researched articles and hints on our machines. MOLYMERX is now able to offer subscriptions to MICRO 80 and the cassette service for their software for \$59.00 PA and \$130.00 PA respectively. Anyone interested can call us or send a A4 sized SAE for a free sample copy of random issues for the last few years. Believe me, you'll find it a very good 36 cents worth !

Also from MICRO 80, we are able to offer copies of Eddie Paay's excellent book which is intended for all who are interested in writing machine code at whatever level of experience. The novice assembly programmer will be introduced quickly to making his machine perform useful functions in Machine code and the expert will find he is writing shorter and more elegant programs to attain his desired results.

ASSEMBLY LANGUAGE TOOLKIT comes complete with a neat and full featured symbolic debugger called (surprisingly enough) DBUG on Tape (at \$69.95) or on Disk (at \$75.00). This is a very good package at a very good price.

We are also experimenting with COMMUNICATIONS and can supply MODEMS at very very good rates. This is the biggest field on the computing horizon and MOLYMERX is able to supply hardware (a SENDATA direct connect MODEM) and software (TELCOM II) the equal of any in the world at prices that NZ has not seen for a long time.

Programs that have been **UPDATED** since your last notification are :

PASCAL now with Vers.6.0. VARPTR is extended to procedures and functions and returns the start address of code. FILES may be declared and passed as parameters. NEW, MARK, RELEASE, DISPOSE AND NIL are included. Support is included for RECORDS (without variants) as is GET, WITH and PUT and file buffers. Other minor cosmetic improvements are included notably the acceptance of lower case in PACJCL.

SYSTEM DIAGNOSIS (P.1.17)- virtually rewritten with both Model 1 and Model 3 versions handling Single and Double density 35,40 and 80 Track Drives and improvements to the RS 232 tests and continuous test modes.

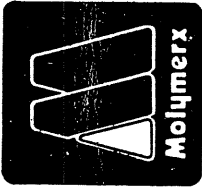
UNDERWORLD (P.7.5) is now available on Disk as well as tape

AIRBUS (P.7.6) A choice of airports for take off are allowed for as well as minor alterations to the AIRBUS's "feel".

GENERAL

It is not as well known as it might be that older SYSTEM 80's are incompatible with the TRS 80 Model 1's in that Printer output is ported rather than memory mapped. This has no effect as long as the computer device driver is used to supply printer output. (Newer SYS.80's are not affected.) Software that uses it's own printer drivers, however is liable to cause problems. With regard to our own software this has had the most unfortunate effect of limiting the use of several of our most exciting programs ; viz CRAYON, CRAYON DELUXE and SCRIPTR ; all from PIONEER software and all most useful and wide ranging programs.

Courtesy of Mr.A.G.Briggs of Briggs Electronics in Hastings the following simple hardware fix is offered. " .. add 2 diodes from Pins 5 and 11 of Z34 to Pin 6 of Z 33 in the expansion interface.



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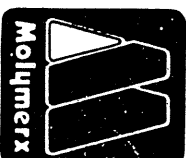
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\$101.00 to \$200.00		\$3.60	
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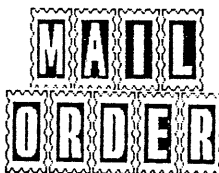
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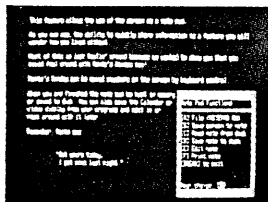
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Bytes free in MBASIC	30,776	18,488
Bytes free of formatted disk	196K	160K
64K Memory drive	YES	NO
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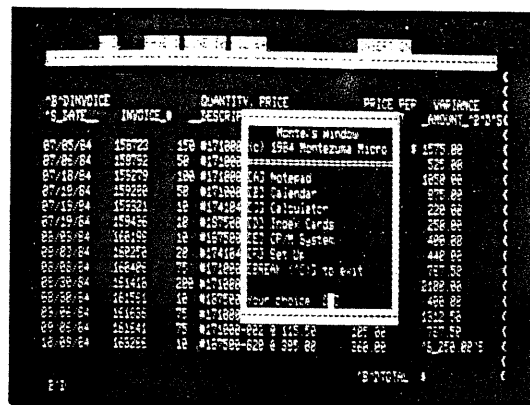
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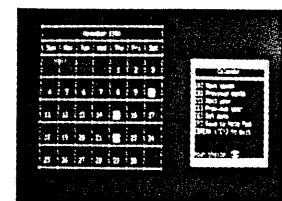
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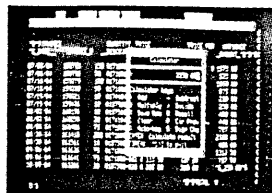
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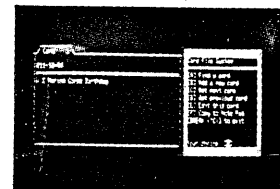
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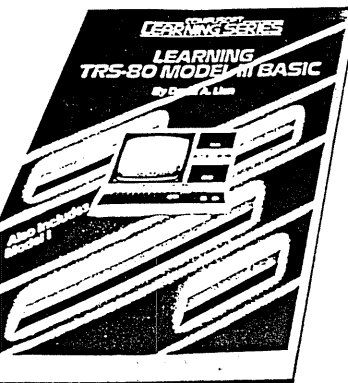
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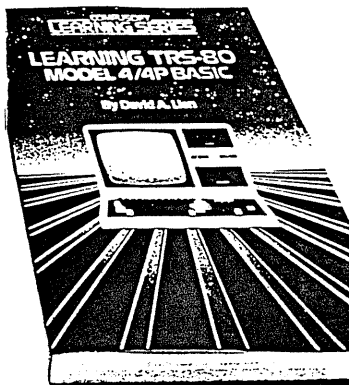
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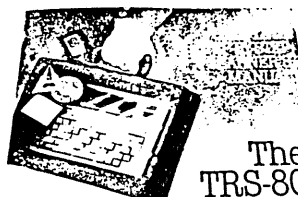
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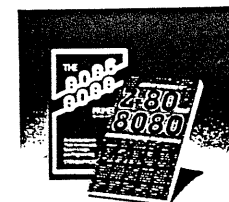
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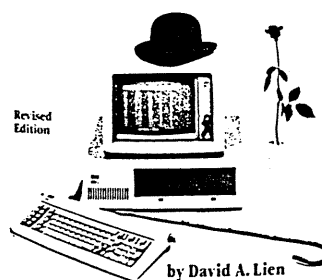
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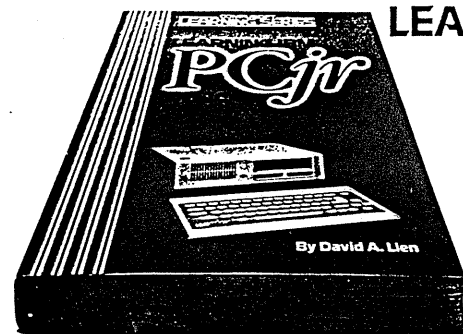
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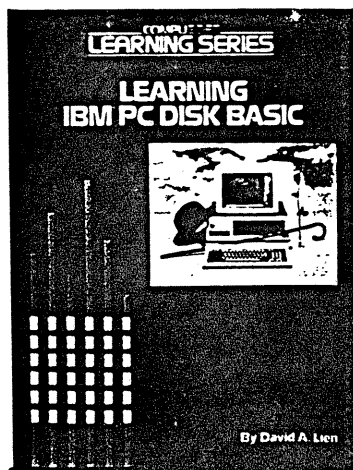
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As you read, you might decide you need something like SU+, but don't think you could learn to use it. If so, write to Powersoft. They're considering a companion product that would be less powerful but easier to use, a user's disk utility as opposed to a hacker's utility.

Five Stars?

I give Super Utility Plus a five-star rating because it's the jaws of life for TRS-80 disk systems. Since I often don't use Super Utility Plus for weeks at a time, it might seem strange to rate it so highly. Perhaps it's even stranger to give such a high rating to a program that is sometimes exasperating to use.

The first reason for the high rating is that a previous version of SU+ won first place as *80 Micro's* 1982 Utility Program of the Year. On the whole, this version is even better, especially on the Model III. SU+ lives up to its name—it is a super utility.

Some people dismiss the award's importance because they feel that SU+ is useful only to software hackers. Actually, nonhackers can find the program useful too.

That brings me to my second reason for giving SU+ a five-star rating. This program is like a fire engine. You don't need it every day, but when you do nothing else will do the job.

The bad news is that you might find SU+ confusing to use. If that worries you, remember that the documentation and other support are much better for this version.

In General

SU+'s zap utilities let you do almost anything to one or more disk sectors, including reading, writing, modifying, verifying, searching, and copying them. You can do this to the sectors, the data, and—to some extent—the address marks.

You can eliminate files from a disk in many different ways, either as individual files or as categories of files. You can remove all passwords from a directory, zero unused entries in the directory or granules on the disk, change the disk's name, and change file parameters including name and password.

You can format a disk for almost any DOS if your computer has the necessary hardware. (SU+ works with a standard Model I, but to work with all DOSes you need an installed double density modification.)

You can extend the number of tracks on a disk, a handy feature for going from 35 to 40 tracks. You can also reformat a disk while preserving the old data. This feature has saved many a disk that had one or more soft errors.

SU+ has two back-up commands. One does a straightforward back-up. The other backs up some protected disks.

The repair utilities automatically repair GAT (gran allocation table) and HIT (hash index table) sectors along with TRSDOS boot sectors. It also recovers killed files, unless TRSDOS killed them.

It checks a directory for many types of errors, changes a directory's address marks, moves the directory to a different track, clears the unused entries from a directory, and even displays the directory.

The tape utilities read a tape, let you examine and modify the contents, write a new tape, and verify a copy. SU+ also has a tape copy utility that copies most protected tapes.

The 15 memory utilities do almost anything you can think of to the computer's memory. Some involve transferring data between disks and memory.

The file utilities are the ones I find most useful. You can display the sectors of a file to locate and modify them.

Once you locate the sectors, you can use the zap utility's sector copy routine.

You can also make some repairs by finding out what file contains a particular sector. You can compare and copy files, or get a map of the free space on a disk. You can also encode and decode hash codes and passwords.

Dennis Brent, president of Powersoft, says that the new version of SU+ has been almost entirely rewritten. Most of that isn't obvious to the user. For a review of the early version, see *80 Micro*, January 1982, p. 366.

This new version is generally an improvement that offers several nice enhancements. It also has a few bugs and problems. Most of the bugs should be eliminated by the time you read this. The problems are, to some extent, inherent in the program.

Each SU+ disk contains two versions of the program, one for the Model I and another for the Model III. (The Model III version also boots and runs on the Model 4.) Powersoft has developed and debugged the Model III version better than the Model I version, but none of the bugs and problems I found were fatal.

For me, the most annoying problem occurs when you ask SU+ to compare two files. Even when the files are identical, SU+ almost always gives you a list of disk sectors that don't match.

The reason is that SU+ compares every sector in every granule assigned to the file. A file usually has a few unused sectors, past the point where the file ends, that contain random garbage.

SU+ compares these sectors like the rest, and produces a number of erroneous mismatches. Until you find out where the file ends on the disk, you don't know whether the two files are different.

Another problem occurs when you use SU+ to display the sectors of a disk's directory. The directory sectors are much easier to read in the Model III version because of a space in front of the file names. In the Model I version, one of the noncharacter symbols appears in that place, making it more difficult to read the file names.

Features

Experienced users will appreciate a big change with this SU+—a DOS specifier system that's easy to use.

Each previous version of Super Utility has supported current versions of the popular TRS-80 DOSes. SU+ 3.1 supports current versions of the following Models I and III DOSes: DBLDOS, DOSPLUS, LDOS, MULTIDOS,

NEWDOS/21, NEWDOS/80 2.0, and the various forms of TRSDOS including 2.7 for the Model I, and 6.0.

SU+ has limited support for double-sided use of DOSPLUS, LDOS, and MULTIDOS. SU+ version 2.2z supported all these in a single-sided mode except TRSDOS 2.7 and Model III MULTIDOS. Model I MULTIDOS was supported indirectly.

This DOS support lets you work between different disk operating systems. That might be handy if you work with someone who uses a different DOS. You can transfer a file from one DOS's disk to another DOS's disk. You can even format a disk for a DOS you don't have.

In the past, it's been difficult to start using a different DOS. You had to tell SU+ what the new DOS was by using an exasperating DOS specifier process. At last SU+ has a DOS specifier system that works for the nonhacker.

SU+ 3.1 has other new features such as limited automatic DOS and density recognition. These features help people working with mystery disks. I personally have found them interesting but not too useful.

On the other hand, perhaps I have been spoiled by using MULTIDOS. When it comes to disks whose density and format are unknown, MULTIDOS works almost flawlessly, whereas SU+ seems to have problems determining a disk's operating system as well as whether it's single or double density.

When Powersoft released the first version of Super Utility, disk operating systems didn't have all the features they have now. Some of these new features reduce the need for SU+. At one time, Super Utility was a virtual necessity even for such chores as moving files from one disk to another.

As DOSes have become more sophisticated, many things I used to do with SU+ I now do with DOS utilities. That doesn't mean I no longer use SU+, just that I don't use it as often. In fact, SU+ is faster for certain operations, such as purging old files from a disk.

Repairs

Super Utility Plus automatically repairs a bad GAT or HIT sector in the directory. (Automatic GAT and HIT repair are features that MULTIDOS and DOSPLUS also offer.) Often that's all you need to fix a crashed directory, but not always.

SU+ offers one more easy repair option that rewrites the directory's data address marks (DAMs). MULTIDOS also changes the DAMs on a directory. DAMs are identifying marks hidden in the formatting. DOSes use them to determine where a disk locates its directory.

If you work with more than one operating system, this SU+ feature might be a necessity because some operating systems like TRSDOS are picky about reading directories with the wrong address marks.

Super Utility Plus also offers an automatic boot repair for TRSDOS disks. You can repair boots of other operating systems by copying the boot from a good disk.

If one of the low-numbered system files is bad, the disk won't appear to boot. In that case, you have to put good copies of those files onto the disk also.

SU+ isn't limited to rewriting the data address marks on a directory. It reads them from or writes them to any disk sector. Different DOSes use these address marks differently.

Often a disk is damaged when an alien DOS writes to it because the DAMs are changed. You can repair this damage fairly easily by checking the DAMs and rewriting them if necessary.

Different DOSes

One of SU+'s strengths is that it works between different DOSes. The most obvious task is transferring files from one disk to another when you use different DOSes. SU+ also handles transfers between disks written in different densities, provided your computer has the necessary hardware.

However, passing files between TRSDOS 1.3 and other DOSes is not always successful. The most important reason for this problem is the way TRSDOS 1.3 handles its directory. TRSDOS 1.3 keeps track of where a file ends differently from most DOSes.

When you use SU+ to transfer a file from any other DOS to TRSDOS 1.3, the file generally appears to gain a sector. From TRSDOS 1.3 to another DOS, the file generally appears to lose a sector. Actually, the file SU+ copies is all there; the directory entry is wrong.

SU+ doesn't correct the directory entry because that requires too much code. The program doesn't have enough room left for that feature.

To overcome this problem, you can use a procedure for patching a TRSDOS 1.3 directory that appears in Appendix B of the SU+ manual. The procedure is clearly written but does contain some inaccuracies.

I don't want to describe the whole procedure, but you should know how to correct a mistake you make while typing in the correction. Just use the arrow keys to reposition the cursor and type over the mistake.

As a general rule, you must use the command +14 to position the cursor. Also, you must subtract one from the entry, not add one.

Unless you are very good, you should practice on a copy of the disk, not the original. That way, when you make a mistake, you can call Powersoft and get help because you still have the original disk with no additional damage.

Unfortunately, the SU+ manual doesn't tell you how to patch the disk directory when you're going the other way. If you copy a Basic program from TRSDOS 1.3, it won't load and execute correctly with another operating system because the file appears shorter than it is.

The program loads without the end marker the Basic interpreter expects to find. The Basic interpreter doesn't know where the program ends. Also, lines are missing from the program. When you try to list it, you get the first part, then a lot of garbage.

In this case, you must adapt the TRSDOS instructions to the other DOS. You need to add one to the sector count for the file and you need to know the directory's location. Other than that, you should use the instructions in the SU+ manual even though they are for TRSDOS 1.3.

Another common problem occurs when you use a Model III to make a copy of some Model I disks. The disk appears to be copied correctly. The copy even checks as identical to the original disk when you use SU+'s Compare Sectors command. However, when you put the copy into a Model I disk drive, you find that TRSDOS 2.3 can't read the directory.

The fault lies with the Model III hardware. The floppy disk controller (FDC) in the Model I reads and writes four different kinds of DAMs. The Model III can't write two of these at all.

Also, the FDC can't correctly recognize the DAMs. In fact, it misreads them. Because the problem is in the hardware, SU+ can't do anything about this.

If a Model I is available, however, SU+ can write the correct address marks if you use the Read-Protect directory command. MULTIDOS can also correct the data address marks on a Model I directory.

Documentation and Support

The current version of SU+ comes with fairly extensive documentation. However, it's not generally tutorial, although it contains some examples. Unfortunately, the examples haven't been fully debugged.

The manual has some other mistakes. At the beginning of the Repair Utilities chapter, the manual advises you to "use FORMAT WITHOUT ERASE on the disk to make sure it is readable."

That's a potential disaster. You should use the Verify Sectors command because that can't destroy anything unreadable. Destruction is possible if you use the Format Without Erase command.

Despite these problems, the new documentation makes the program much more usable. The documentation is fairly clear, and Powersoft is planning further improvements and additions. These are relatively easy to make because the documentation comes in a loose-leaf binder.

Several books published by Powersoft support SU+. These are available separately from the program.

The novice to intermediate user can read *Inside Super Utility Plus* by Paul Wiener. The advanced user can refer to the *SU+ Technical Manual* by Kim Watt, which includes some DOS notes by Pete Carr. For version 3.1, this now comes as a set of pages that go into the documentation binder.

When you call Powersoft to ask about Super Utility Plus, you usually talk to Renato Reyes. I have found him to be generally knowledgeable, helpful, patient, and courteous.

Good support is one of the reasons for SU+'s high cost. Powersoft could market the program for less if they didn't provide support.

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

File Utilities

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

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.

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.

SUPER UTILITY PLUS — NOW FOR THE MODEL 4

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.

You receive two copies of SU + , each on a disk that you can't copy by ordinary means. This inability to back up SU + has been a sore point with many users.

In the past the company offered an extra copy for \$10 to registered owners. They also promised very quick turnaround on replacing damaged copies. Unfortunately, the one time I had to return a disk, it took a month to get a replacement copy.

To Buy or Not to Buy

Anyone who depends on his TRS-80 should have access to SU + . The problem is that the program is not trivial to learn.

If you're a hacker, you should buy it and learn everything you can from it. If you're not a hacker, but would like to learn about the TRS-80 disk system, you should also buy a copy. SU + is now much easier to learn to use, and it looks like the support will increase.

Experimenting with all the features of SU + teaches you a great deal about the TRS-80. Also, when you need to use SU + , you'll know how to get the most the program has to offer.

If you are not a hacker and not interested in your machine, you probably won't get much from merely owning SU + . You also might need its features the most.

Last, those using TRSDOS 6.0 on the Model 4 should definitely buy SU + . TRSDOS 6.0 has no utility packages at this time. If that situation doesn't change, SU + is almost a necessity.

SU + 's Future?

It seems to me that the Model 4 will prove too much of a temptation to Powersoft for them to let SU + alone. The Model 4 in its standard disk configuration has 16K more memory than the Models I and III. You can also add a second 64K of memory at Radio Shack.

What can you do with 64K or, even better, 128K of memory? One complaint from SU + users is that they can't copy files from double-sided, double-density, 80-track disks, because SU + 's copy routine requires the combined directories to be stored in the computer.

A 48K machine doesn't have enough memory to store all those directory sectors, let alone copy the files. However, the standard 64K on the Model 4 makes that possible for a future version of SU + . ■

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 cannot 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 | 5. Copy Sector Data | 9. String Search |
| 2. Verify Sectors | 6. Zero Sectors | 10. Sector Search |
| 3. Compare Sectors | 7. Reverse Sector Data | 11. Read ID Address Marks |
| 4. Copy Sectors | 8. Exchange Sectors | 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 | 5. Disk Directory | 8. Change Disk Name |
| 2. Kill by Category | 6. Zero Unused Entries | 9. Change File Parameters |
| 3. Remove System Files | 7. Zero Unused Granules | 10. Check Directory |
| 4. Remove all Passwords | | |

Disk Format

- | | | |
|--------------------|-------------------------|------------------------|
| 1. Standard Format | 3. Format without Erase | 5. Write Format Track |
| 2. Special Format | 4. Build 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 essentially a matter of trying it and seeing.

Disk Repair

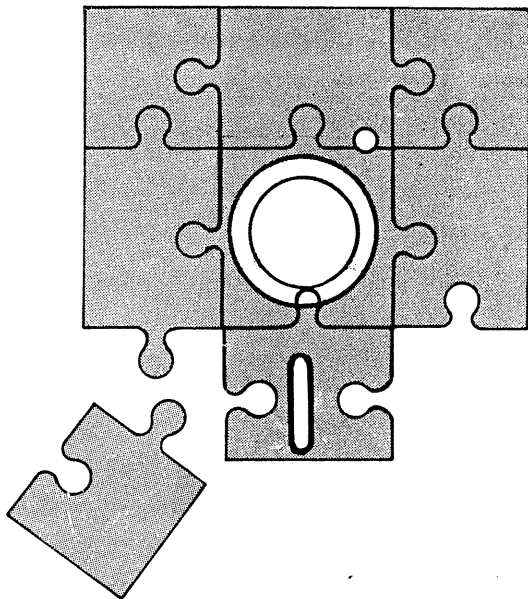
- | | | |
|---------------------------|------------------------------|--------------------------|
| 1. Repair Gat Sector | 5. Un-read Protect Directory | 8. Display Directory |
| 2. Repair Hit Sector | 6. Recover Killed Files | 9. Check Directory |
| 3. Repair Boot Sector | 7. Move Directory | 10. Clear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

Tape Utilities

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

PROGRAMMING UTILITIES



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 to which you frequently make reference, as either program can simply be relocated to a more convenient point in memory. This program is included in MONITOR 3, discussed further on in this catalogue.

Memory Requirement 16k 11-1227
 TRS-80 Tape Model 1 & 3
 SYSTEM 80 Tape Mark I & II

BASE CONVERTOR

Binary - Hex - Octal - Decimal conversion. Sooner or later when using your computer 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!

Memory Requirement 16k 11-1204
 TRS-80 Tape Model 1 & 3
 SYSTEM 80 Tape Mark I & II

INSTANT ASSEMBLER ✓

This can be supplied on either tape or disk. With this utility you can assemble directly to memory and immediately debug your program with the built-in single step debugger. There is the facility to quickly switch from assembler to debugger and back again without losing the source code. This feature alone makes this utility and excellent learning tool for assembly language programming. INSTANT ASSEMBLER is unique among tape based assemblers in that it produces relocatable code modules that can be linked with the separate linking loader which is supplied in two versions for loading programs into either high or low ram. This allows you to build long program with small modules. INSTANT ASSEMBLER also features immediate detection of errors as the source code is entered, a compact code source format that uses one third as much memory as standard source, and many operational features including single stroke entry of DEFB and DEFW, pinpoint control of listings, alphabetical listing or symbol table, separate commands for listing error lines or the symbol table, block move function, and verification of source tapes. The debugging facility provides single stepping with full register displays, decimal to hex conversion. The single stepper will step one instruction at a time or at a fast rate to any defined address. Instant Assembler occupies less than 8400 bytes of memory. In a 16k machine this leaves sufficient memory to write assembly language programs of around 2000 bytes. This and its modules linking feature make INSTANT ASSEMBLER ideal for users with only 16k of machines. The disk version of this program contains the same feature as the tape version with the addition of disk storage for source and object code and a stand-alone version of Micromind, the debugger program.

Memory Requirement 16/32k Tape 44-1255
 TRS-80 Tape/Disk Model 1 & 3 Disk 44-1266
 SYSTEM 80 Tape/Disk Mark I & II

COLOR COMPUTER DISASSEMBLER

This program allows you to gain a knowledge of the Color Computer ROM to aid you in machine language programming. In operation it will disassemble any portion of the Color Computer's memory. A Basic program is supplied to assist the user in understanding how memory is organised and disassembled

Memory Requirement 16k 42-1234
 TRS-80 Tape Color Extended Basic

GENCOP — SYSTEM TAPE COPYING ON THE SYSTEM 80

One of the drawbacks of the System 80 Mark I is that it is not possible to load System tapes from an external cassette. Gencop overcomes this problem. First of all a machine language tape can be loaded from either the resident recorder 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 given the user access to the exterior port of the System 80 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 should be stressed that this utility does not add any ability to the machine in the area of tapes which have anti-copying device built in, or to tapes which have automatic load or run features.

Memory Requirement 16k 11-1216
 TRS-80 Tape Model 1
 SYSTEM 80 Tape Mark I & II

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 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 the registers.
3. Pop the stack.
4. Push the stack. Tracker, incidently, maintains a separate internal stack for the object code.
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 Trace 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 to jump instructions.
5. Display a line showing the state of the programs counter registers, the instruction it point to, and the contents of the other registers before the instruction if obeyed.
6. Display the contents of alternative 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.

Memory Requirement 32k
TRS-80 Disk Model 1
SYSTEM 80 Disk Mark I & II

11-1240

MZAL™

Release Two Is Here!

MZAL — THE COMPLETE DEVELOPMENT SYSTEM FOR YOUR Z-80

MZAL stands for Modular Z-80 Assembly Language and is a complete development system for assembly language programmers. The development package consists of three programs: TXEDIT a full screen general purpose text editor, ASMBLER a menu driven Z-80 assembler, and LINKER - the object code linker. If you are contemplating the purchase of an Editor Assembler, then MZAL should feature strongly on your option list. For the programmer who regularly works with assembler, then MZAL has a number of powerful features. For one, the size of your programs are only limited by a 30,000 byte symbol table or your available disk storage. Secondly, TXEDIT the MZAL full screen editor goes a longer way towards diminishing the painstaking work of assembling each module. Within TXEDIT there are some 32 commands and four operating modes: some of the features are as follows:

- Character change, insert and delete
- Delete, copy, or move lines or blocks of lines
- Search for a specified string
- Global change
- Renumber
- Search for a specified line number
- List the text or a portion of the text to the line printer
- Create, examine, modify, split, and merge disk files containing text.
- Convert text to and from the EDTASM source tape format

The assembly of programs remains the function of ASMBLR, the MZAL multi-pass Z-80 assembler. The functions within ASMBLR are as follows:

- Object to disk/tape
- Pause on error
- List to printer/video
- List symbol table; and
- Generate an /RLD file

In this mode you have the ability to link source files - thus overcoming any memory limitation - or use MZAL's macro language for conditional assembly. This feature permits you to assemble blocks of your program depending on specific conditions. As an extension of this feature, MZAL permits you to build a library of commands for later inclusion in a program. This may at first seem daunting, however the manual provides numerous programming examples. An added feature of ASMBLR is that symbolic labels up to eight characters long are supported an alphabetical symbol table and cross reference listing can be requested at will. The last step is the use of the LINKER program. This takes your CMD machine-language modules and links them together into a single program. MZAL's linker provides 12 separate functions:

- BUILD - Creates a composite CMD file from the modules currently loaded
- END - Returns to DOS
- EXEC - Executes the linker commands from a control file
- INIT - Initialises the linker
- LOADA - Loads a file without relocating it
- LOADR - Loads a file and relocates it
- MAP - Displays all the modules currently loaded
- ORG - Defines the origin for next module to be loaded
- SET - Allows manual adjustment of levels in a loaded module
- TAPE - Creates a composite tape file
- TRAN - Defines the main execution address of your module; and
- XREF - Creates a cross-reference table of symbols.

For the assembler programmer who is already using another development system, MZAL provides a utility to overcome this problem. LEXCONV allows MZAL users to read disk files created by other assemblers. It converts any of four file formats (MZAL, Apparat EDTASM, Macro-80 or unnumbered ASCII) to any other of the four. LEXCONV is menu-driven and particularly easy to use. In our opinion, MZAL is an extremely powerful program development tool. It requires sophistication to use, and as such is not recommended to people who are only beginning to program in assembler. We recommend you purchase our INSTANT ASSEMBLER as the alternative. The system is sold on disk for TRS-80 Model 1 & 3, and SYSTEM 80 users. Included are complete operating instructions, examples, demonstration files, documentation on internal file formats, and a copy of Zilog's 75 page reference work, "The Z-80 Technical Manual".

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

Model 1 46-1244
Model 3 46-1245

ENHANCED BASIC — A POWERFUL ADDITION TO LEVEL II

Enhanced Basic is an excellent addition for user operating Microsoft Level II in either the TRS-80 or SYSTEM 80 machines. As the 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 people learn Basic and then wish to turn their attention to machine language or assembly language programs. This can be a difficult transition. Enhanced Basic, with its ability to change memory location, include machine code subroutines without leaving Basic and its Monitor commands, constitute a very valuable tool for such a transition. Furthermore, it sits at the bottom of memory and only occupies 2500 bytes or so of RAM. Even in a 16k machine, this leaves ample room. It adds the following capabilities to Level II.

EDIT ON ENTRY: This feature permits entry to and return from Level I edit mode whilst entering a line.

RECALL BUFFERS: There are two uses of this feature. Firstly you can recall the last entry made after hitting enter. The second is to store any statement or string you wish away in a special buffer and then recall it at will. It remains in the buffer and may be recalled as often as you wish.

CASSETTE MOTOR CONTROL: A command to switch the cassette motor on or off.

MEMORY SIZE CHANGE: An annoying feature about the Level II environment is that you are only given one chance to set the memory reservation, notably when you power up. This command permits you to change your memory reservation without having to first download the program.

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 programs' lines must be numbered higher than the first. In other words, no merge is performed.

SINGLE STEP AND BREAKPOINT: This command enables 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 the variables are cleared and lost, essentially you have to rerun the program. With ENHANCED BASIC the variables are not lost, this avoids the necessity to either RUN or EDIT.

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 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.

DEFINE FUNCTION: The DEF FN statement is supported allowing you to create your own implicit function. 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.

MONITOR COMMANDS: For monitor commands are included in ENHANCED BASIC to allow you to examine, edit and search ROM or RAM (though obviously ROM cannot be edited) and to make a machine code tape for later reloading under the System command.

CASSETTE LOADING IMPROVEMENT: This command replaces the CLOAD of Level II and seems to have virtually eliminated the problem which has bugged TRS-80 owners since its inception, 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.

DISK FEATURE: ENHANCED BASIC is compatible with Disk Basic, more importantly when it is called from disk it exists to Level II, not Disk Basic. Effectively ENHANCED BASIC can load and save files from a Level II environment. As far as we know it is the only program that enables this to be done.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model I
SYSTEM 80 Tape/Disk Mark I & II

Tape 11-1211
Disk 11-1267

STEP 80 — SINGLE STEP THROUGH RAM OR ROM

If you write machine language programs then you will be familiar with the speed of the Z-80 processor in either your TRS-80 or SYSTEM 80. It can execute thousands of instructions in less than a second. While this speed is one of the big advantages of machine language programming, it can also cause problems. One small error in programming happens so quickly that it can be very difficult to find. STEP 80 is a type of program called an emulator. It "emulates" the operation of the Z-80 processor in your TRS-80 and allows you to step through any machine language program one instruction at a time. Going at this slow rate you can see the address, hexadecimal value, Zilog mnemonic, register contents, and step count for each instruction. This ability is extremely useful not only in debugging your own programs, but also examining how other people's programs work. Step 80 leaves the top 14 lines of the video screen unaltered so that the program you are stepping through can perform its display functions unobstructed. It will also follow program flow right into the ROMS, and is an invaluable aid in learning how the ROM routines function. Commands include Step (trace), Step to a branch, run in step mode at variable step rate, disassemble, display or alter memory or CPU registers, ASCII dump, display flags, jump to a memory location, execute a call, set breakpoints in RAM or ROM, write SYSTEM tapes, and relocate itself to any page in RAM. The display may also be routed to your line printer for hard copy, and custom print drivers are automatically supported. STEP 80 is written in very efficient code and was intentionally kept compact (a little over 4k) to prevent memory conflict and allow more work space.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

44-1248

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. 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 rennumbers 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 a particularly straightforward and easy program to use. It saves a great deal of time and energy over the more normal approach of converting machine code to decimal and entering it in data lines. The program, at this time, is only suitable for 16k Level II machines.

Memory Requirement 16k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-1221

EDJUST — EDITOR ASSEMBLER TEXT ADJUSTER

EDJUST is an extremely useful program. It continues the ancestry of the Tandy Editor Assembler in that it is an appendage of EDTASM which itself was an appendage of the Tandy cassette based Editor Assembler. The original Editor Assembler was patched by Apparat, renamed EDTASM, and included free in NEWDOS and NEWDOS 80. It remains necessary for a purchaser of EDJUST to own EDTASM. EDJUST adds certain useful facilities to EDTASM and in particular it enables the maintenance of an assembly language routine library and a return to EDTASM after an unwanted reset without losing the contents of the text buffer. In addition to these facilities there are four new commands as follows:

CHANGE CURRENT LINE:

This command searches the current line for the last string with the F command. If found, it replaces it with a stipulated string.

MOVE LINES:

This command rennumbers lines and moves them to a place in the text appropriate to their new line numbers.

SEARCH FILE FOR LINES:

A stipulated file specification, which is assumed to be an assembly language file, is searched for lines with line numbers lying between two stipulated limits. If found, they are rennumbered using an increment, then inserted into the text buffer in the place appropriate to their new numbers.

JOIN LINES TO FILE:

Lines have numbers between two stipulated line numbers are copied from the text buffer and added to the end of a stipulated filespec, which is assumed to be an assembly language file. They are rennumbered using the latest value of increment to continue the existing numbering of the file. This command, together with the preceding, enables the use of an assembly language library. Routines once entered into a program may be saved in a library with this command and used in other programs by means of the previous one.

Memory Requirement 32k
TRS-80 Disk Model 1
SYSTEM 80 Disk Mark I & II

11-1210

SYSDUMP — STORE BASIC PROGRAMS IN SYSTEM FORMAT PLUS VARIABLES

PROZAP — A THIRD GENERATION ZAP

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 users is operating on the medium rather than in memory. PROZAP is a machine language program which loads automatically from DOS by simply entering in the program name. It has a large library of commands which are listed below, but probably its uniqueness centres upon its ability to copy a whole track into memory for investigation. The contents can then be displayed in either ASCII or Hexadecimal. An appealing feature of PROZAP is a linked cursor so that if one positions the cursor over a Hex number the other cursor is automatically displayed over the ASCII equivalent. Our readers who are using LDOS will be pleased with the fact that there is compatibility with PROZAP, furthermore, there is also compatibility with the TRS-80 Model 3 as PROZAP has the ability to register double density disk formats. A vital feature of PROZAP is that the configuration of the disk is stored in a six byte table containing data on the density, grandules per track, sectors per granule, low sector number, high sector number, and sectors per track. All these can be changed. The program is supplied on disk and may be used with a single drive 32k machine. There are two levels of command: the Command Level and the Display Level. The library of functions is as follows:

COMMAND LEVEL

1. Display any sector
2. Automatically 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.
12. Track ID. Overcomes the difficulty of nonstandard track numbering.
13. IBM or non IBM formats may be selected.

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 a Hash Code and its correct position
10. Go direct into a file display mode
11. Print a sector on the line printer
12. Page a new track or sector.
13. Save a sector to memory
14. Load buffer from memory
15. Match the current sector with another.

Memory Requirement 32k 11-1232
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

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, array 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. An 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 of the Basic program, with its database intact will continue from the point at which it was originally suspended. If the display contents are 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 are 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 the the load was successful. Basic programs do not 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 step the running of a program and save everything to tape so that he may return at a later time and be able to pickup exactly where he left off. The obvious application is the storing of lengthy games (adventurers take note!) or application programs. There is now no excuse for working into the small hours of the morning. Further applications that come to mind are the debugging of Basic programs. With SYSDUMP it is possible to stop at any given point and save the variables intact. SYSDUMP is loaded as a System program and resides at the top of memory. It only occupies about 500 bytes, and once loaded can be called whenever required.

Memory Requirement 16k 11-1241
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

CLONE — DUPLICATE SYSTEM TAPES

When the TRS-80 was designed there was no provision made for the duplication of machine language programs. Essentially, if you wished to make a Backup of your valuable SYSTEM tapes, then you were out of luck. CLONE rectifies this problem. With this program you have the ability to make duplicate copies of almost any type of tape used on the TRS-80, including Basic, SYSTEM, data lists, assembler source, or "custom loaders". CLONE will display the file name, load address, entry point, and every byte of data in ASCII format on the video screen during the copy process. The Model 3 version also allows you to change tape speed so tape may be loaded in at 500 baud and written out at 1500 baud. CLONE is sold on the understanding that it is not to be used for "pirating" software.

Memory Requirement 16k 44-1262
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

QUIKPRO — GENERATE PROGRAMS IN BASIC

QUIKPRO is a program generator which we distribute under licence from ICR/FUTURESOF in the United States. Used correctly, it will produce custom Basic programs simply and efficiently.

One of the reasons that we stock the QUIKPRO software is that for a lot of people writing bug-free programs is at best a traumatic experience. Often the results seem to be the inverse of the time and energy spent designing and writing the application. QUIKPRO software eliminates this drudgery. The program is completely menu driven, verification features assure accurate entry of data into your program, all files are written in ASCII for easy portability. QUIKPRO will even create the operating manual for your program.

We sell two versions of this program, namely QUIKPRO and QUIKPRO+PLUS. QUIKPRO is designed to produce data entry and file maintenance programs. Data can be alpha and or numeric, with the choice of restricting fields to accept only numeric information. Record selection is performed on a key field. Programs created from QUIKPRO can be listed, modified or used as separate modules either within or to access other programs.

QUIKPRO+PLUS permits you to perform up to 50 separate computations on numerical fields. Furthermore, you can report out calculations in various arrangements, using any of the ordinary math functions between any sets of numbers in the record. The added feature of QUIKPRO+PLUS is that you can use it to generate reports on your lineprinter. Reports can be generated with any column name you choose, with any calculation you might want, from any selection of the records in the total file. Understandably, it is very easy to create a number of different reports for the same file.

An important feature of both programs is that they permit "Indexing". Indexing allows you to access existing files and records which you have created using some other filing program. If you are using any of the MOLYMERX Data Management programs to store your records, then it is very simple to create a separate program using either QUIKPRO or QUIKPRO+PLUS to access the file data and manipulate it accordingly.

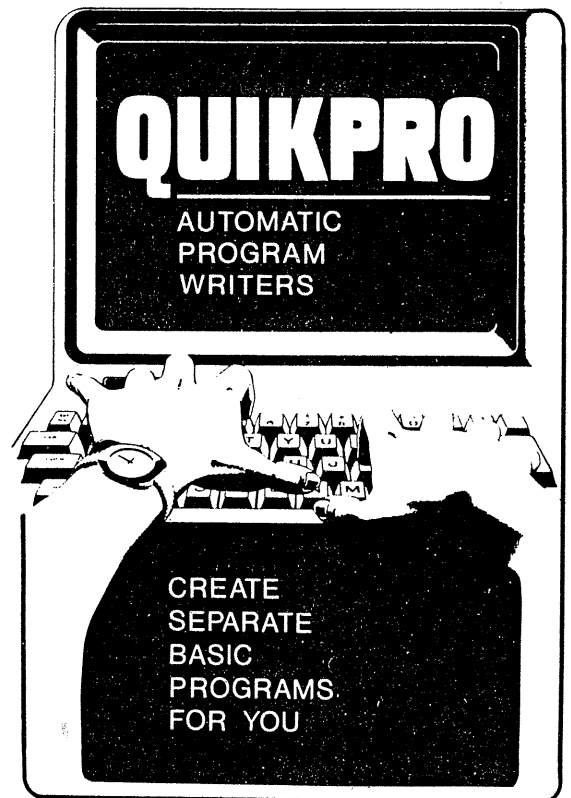
A question we are often asked by customers is whether they should purchase QUIKPRO or QUIKPRO+PLUS. The answer is really quite easy. If you want to print out reports from your computer you will require the PLUS version. If you want to perform various computations on the data in your records, you will also require the PLUS version. If you do not require either of these features, merely the power and versatility of being able to create Basic programs for file maintenance and data entry, then you will need QUIKPRO. The point we would like to stress is that you are not locked-in with QUIKPRO, for you can always upgrade to the PLUS version at a later date. You only pay the difference between the two versions at the time you wish to upgrade.

With little difficulty, it is possible to think of thousands of applications for QUIKPRO. Obviously, we are unable to guarantee that using either of the QUIKPRO programs you will solve your programming needs. However, used properly it is likely to save you hundreds of dollars on bespoke software or from buying "packaged software" than is not tailored to your needs. We recommend that QUIKPRO be used in conjunction with the ACCEL range of compilers to improve the performance of your Basic programs.

QUIKPRO and QUIKPRO+PLUS are only available on disk.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

Quikpro (Model 1)	47-1243
Quikpro (Model 3)	47-1244
Quikpro+Plus (Model 1)	47-1273
Quikpro+Plus (Model 3)	47-1274



SBT — STRUCTURED BASIC TRANSLATOR

Basic, excellent as it is, has one or two failings which we feel are corrected by this program. In machine language programming and indeed in programmable pocket calculators, 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 subroutine 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 that 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 in a year or so after you have written it, it is often very difficult to understand. SBT gets rid of these deficiencies. It has some similarities in structure to machine language programming. You do not use any line numbers and the branches are to labels rather than 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 wrote. 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 the line numbers inserted and all of the branches correctly references by a line number. Broadly speaking, 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.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

40-1252

RENUMBER BASIC

An extremely useful program by which all Basic program may have their lines renumbered. Branches in the lines such as GOTO, GOSUB etc. are automatically renumbered. Two additional commands are "M" and "R". The command "M" inserts a block at the end of the Basic in memory, effectively further programs can then be entered from the keyboard, tape or disk. When the user has completed this further program the "R" instruction is then entered and the second program 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 machines capabilities) and may be incremented by any value. This program is written in machine language and is supplied on tape. Please specify whether you have a 16k, 32k, or 48k machine.

Memory Requirement 16k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-1233

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 CLONE which is listed elsewhere in this section. 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 overlay the DOS operating area in memory. In order to be used, 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 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 difficulty. The same remarks apply to Tandy's Editor/Assembler and other programs including SARGON 1.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

40-1251

SPEEDY — CASSETTE SPEED UP ROUTINES

Ever since the release of the TRS-80 Model III, Model I users have cast a longing eye at the 1500 baud rate of the newer machine. This program was written to overcome this source of frustration. Before our System 80 readers jump on the bandwagon in obvious excitement, it needs to be said that the designers of this machine minimised the tolerances of the cassette input and output circuits. The reason, and no doubt many of our readers are aware, was to improve the loading efficiency of the machine. The result is that SPEEDY tends to work better on the TRS-80, indeed our experience is that the System 80 rarely exceeds 750 baud. In that the software author is relying on tolerances, rather than a strict design criteria, it follows that SPEEDY tied to a specific baud rate will work on one machine, but may not work on another. The author has given the user the opportunity to choose between six baud rates in addition to the original 500 baud.

They are 750, 1000, 1250, 2000. The user, may, therefore, try all these speeds and find the one that is best suited to his particular machine. As a guide, we have found that most TRS-80 Model I's extend to 1250 baud. Probably 60-70% will go to 1500 baud. A small percentage to 1750, and a very few to 2000. In use, there are three parts to the program. The first permits the loading, saving and verifying of Basic programs at the baud rates mentioned. The second is exactly the same, but set one baud rate, 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 is saved. It is an ordinary machine language program, so one simply types SYSTEM and LOADER. When the Loader is in memory, the user returns to Basic whereupon he loads his Basic program at the increased baud rate.

Memory Requirement 16k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-1237

IMPAK

— THE COMPLETE PROGRAMMERS AID

The "impact" of this program is that it represents an extensive "tool kit" containing every foreseeable feature that a Basic programmer could require. We hasten to add that it is not the definitive solution to every programmers needs, such a program does not exist. As is listed below, it is a compilation of some 21 separate utilities, each written by Nigel Dibben, and sold as a complete suite.

COMPRESSION:

REMOVE REMARKS

Remove all statements in a Basic program starting with REM
Remove all statements starting with an apostrophe.
Remove all statements starting with a REM number

REMOVE SURPLUS CHARACTERS

Remove all blanks, tabs and line feed the program statements, not those in any strings or data statements
Remove all redundant colons
Remove all 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 of the following functions may be carried out:

- Pack the lines together so that each line in its expanded forms will occupy no more than 240 characters. Lines will only be packed if they remain syntactically correct. The effect of this 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 remains a completely uneditable line.
- Specify 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.

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 inserts in the program so that when the Trace reach them, it stops and all variables etc. are then available for inspection.

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.

IMPAKT

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.

LINK 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 above
- Check all lines for referencing and display any error
- As above, 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 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 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 is only 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 from 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

- Essentially a normal renumbering program, with one or two extra features.

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 through an inadvertent reboot, or the inadvertent use of NEW etc.

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

IMPAKT is available for Level II or Disk Basic and is compatible with current SYSTEM 80's

Memory Requirement 16/32k
TRS-80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

Tape 11-1218
Disk 11-1258

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 great deal of Basic coding. A mode is also included so that certain control functions can be tested. The Mask is constructed by way of passing a parameter to the subroutine which, in accordance with the normal Basic practice, 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. Numeric, Decimal, Hexadecimal, Alpha (upper case) Alpha (lower case). In extended mode, which it should be emphasised can be mixed 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 supplied on cassette and is compatible with Disk Basic.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-1220

Basic, excellent as it is, has the major drawback of being line orientated. In other words, the only way that one can reference a statement is to use the relevant line number. In a 2000 line program this can become inconvenient. A lot of people avoid this problem by habitually using the same line number for their subroutines, however this technique fails to address the content of the subroutine. This utility rectifies the problem. Using this utility you can label your subroutines, or simply edit these labels into your existing programs. In other words, instead of the statement GOSUB 2000, you can simply type GOSUB TEST. The added advantage is that the subroutine line does not have to be allocated when the program is composed, this if the programmer so chooses, can be written some time afterwards. Certain criteria have to be met when choosing your keywords. The label reference must consist of 1-6 letters or digits, of which the first must be a letter. The label must not contain a Basic keyword. A useful feature is that line numbers and label references can be freely mixed. Thus, ON X GOTO TOM, DICK, 2000, HARRY is valid. After the program has been written as described above, it is saved to disk and delabelled through the use of another utility supplied. This goes through the target program removes the labels and substitutes line numbers. There are three additional functions. One will remove all spaces from the program, excepted those in remarks and quoted strings. The second will remove all REM statements, 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.

Memory Requirement 32k
TRS-80 Disk Model 1
SYSTEM 80 Disk Mark I & II

11-1230

MONITORS 3 & 4

Monitors 3 & 4 by Hubert S. Howe are probably the best available for TRS-80 and SYSTEM 80 computers. 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, interchangeable, the intent is that Monitor 3 should be primarily for tape users and Monitor 4 for disk users. It would be inadvisable for a tape user to purchase Monitor 4 because a number of the functions would not be usable. Tape users who have purchased Monitor 3 may upgrade to Monitor 4 for the difference in price only. Both Monitors are compatible with the TRS-80 Model 3. Monitor 3 is supplied on a 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. The commands available in the Monitors are as follows. Those marked with an * are available only in MONITOR 4.

ASCII dump of memory block
Return to Basic or TRSDOS
Create Object Program File on disk*
Disassemble memory block
Edit memory
Find a specified byte
Hex dump of memory block
Input disk sectors*
Jump to a specified address
Load a System program
Move a memory block
Kill a disk file*
Output disk sectors
Punch out a machine language tape
Read a disk file to memory*

Write a disk file*
Relocate a program from one section of memory to another
Manufacture a symbolic tape (3) or disk file (4)
Type ASCII characters direct into memory
Verify a memory block
Execute Hexadecimal arithmetic
Zero a memory block
Set baud for RS232C interface*
Send to RS232C interface*
Enter RS232 terminal mode*
Receive RS232 terminal mode
Unload the program below 5200*
Find a word

Although ROM may not, of course, be modified by these programs, it may be investigated, displayed or be made the object of a Jump Command.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

Tape 3 11-1225
Tape 4 11-1226
Disk 4 11-1260

PACK/UNPACK

— HIGH DENSITY STORAGE ON REGULAR DISKETTES

Before you sink into the depth of despair with regard to the price of a doubler or double density drives, closely consider this program as an alternative. PACK/UNPACK is the software approach to high density. A regular diskette on the TRS-80 will store 89,600 bytes. With PACK/UNPACK it will store 117,740 bytes - about 30% increase! Surprisingly it does this relatively simply. Of the 256 possible combinations for an ASCII character only 64 are used for lower case letters, numerals and special characters. The remainder are for lower case, graphics and tab codes - some are not used at all. These 64 characters can be stored in only 6 bits but in Disk Basic they are manipulated in 8 bit bytes. These extra bits are used in this program to increase the data storage. In other words, for each regular 3 bytes, PACK/UNPACK will store 4. The major advantage of this program is that it performs its own input/output operations so effectively that all the user has to do is to give it the data. The program is in machine code and will usually be added to a Basic program as a subroutine, called by a Basic USR statement. To illustrate its use, a sample Basic program, using the subroutine is included in with the PACK/UNPACK instructions.

Memory Requirement 32k
TRS-80 Disk Model 1
SYSTEM 80 Disk Mark I & II

11-1228

SOUND — A MACHINE LANGUAGE SUBROUTINE

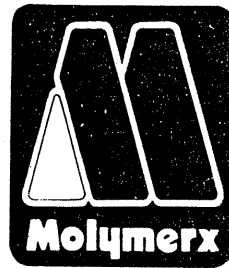
This is a very simple, but nonetheless, useful and interesting program which is loaded into the top of memory and then called from any Basic program. The use of this subroutine enables a programmer to create essentially any sound to give more dramatic effect to his Basic program. Six parameters may be 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 time 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. These mini-amplifiers can be readily purchased at your local electronics store.

Memory Requirement 16k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-1236



DISK INDEX — INDEX YOUR PROGRAM LIBRARY

As your program library grows, keeping track of each program becomes more difficult. DISK INDEX was written to alleviate this difficulty. INDEX will build a list of all the programs in your collection, alphabetize them, and allow you to either print the index on paper or find the location of any program quickly and easily. The program names and free granules left on each disk are read automatically by the program (they do not need to be typed in). Once an index of program names has been created, it may be alphabetized and searched for any disk, program, or extension. Disks or programs may be added or deleted, and the whole index or any part of it may be sent to the line printer. The index itself may also be stored on disk for future access and update. DISK INDEX is written entirely in machine language for maximum speed and flexibility. It will run on a Model 1 or Model 3 and catalogue disks for either machine (Model 1 owners must have a double density modification to catalogue double density or Model III disks). It will automatically identify any format and any operating system now in use on either the TRS-80 Model 1 & 3 and SYSTEM 80 Mark I & II, except CP/M. A 48k machine can hold in memory an index of over 2500 programs and you may create as many separate indexes as you need. The minimum requirement is one drive and 32k.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

44-1247

RESQ 2 — RESTORE DAMAGED TAPES

This unique and original program will give you the ability to restore or "rescue" programs that have been damaged or can no longer be loaded into your computer. Cassette recordings are subject to several types of damage. Thin spots in the oxide, dirt, voltage fluctuations while recording, or stray magnetic fields can all contribute to lost or added bits of data. RESQ 2 was written to provide a method of restoring tapes than can no longer be loaded for these reasons. It can restore Basic, System, and Assembler tapes. RESQ 2 compares two copies of the damaged tape to attempt a restoration, though restoration can sometimes be achieved with only one copy. After the damaged tape is corrected in memory, a new tape may be recorded and verified. The success rate of RESQ 2 will depend on the severity and quantity of errors. RESQ 2 comes with a comprehensive user manual and examples of two types of "crashed" programs to practice on. This program is supplied on cassette and may be transferred to disk if desired.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

44-1249

IMON

— AN ADVANCED MONITOR

You are probably curious why we stock IMON together with MONITORS 3 & 4. The explanation is that the preceding Monitors are designed to be used in conjunction with Basic programmes, 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 a 16k machine) in addition to the Monitor but who requires additional commands, particularly applicable to machine language programming. In the following list of IMON commands therefore, the emphasis is given to those commands which are present in IMON but not in Monitors 3 & 4

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. This is probably the most important feature if IMON is being used for 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 RS232C 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 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.
15. Printer set up disabled.
16. Register display. Of great value is the ability to display the contents of the registers. The stack point 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.

This is a good 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.

Memory Requirement 16k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-1217

SYSTEM DIAGNOSTIC — TEST BED YOUR COMPUTER

This is a major program from Hubert S. Howe, author of MONITORS 3 & 4 which are listed elsewhere in this catalogue, as well as several noted books on machine language programming. SYSTEM DIAGNOSTIC is what could be termed a complete test for your TRS-80 or SYSTEM 80. An important feature of this program is that it can run in a continuous test mode. This is particularly useful in detecting intermittent faults. The individual tests carried out by SYSTEM DIAGNOSTIC are as follows:

ROM: Does a normal ROM check, that is to say it goes through the entire ROM and carries out a checksum.

RAM: There are three RAM tests in the Model 3 version and four in the Model 1. These tests covers every address and data value. There is a unique "glitch" test for the Model 1, used to simulate the effect of electrical spikes, which may or may not be effecting the performance of your computer.

VIDEO DISPLAY: This is a complete character generator test which prints all available characters on your video display. Model 3 owners have the ability to display the Japanese Kana set. The video ram test checks every character in each position on the video display, thirdly a video signal test enables you to check the alignment of your CRT and any transient voltage problems.

KEYBOARD: Every key contact is tested.

LINEPRINTER: This is very similar to the video test. It prints a line of 64 characters of each of the 95 legitimate ASCII characters in the character set of most line printers.

CASSETTE RECORDER: This test reads, writes, and verifies data. An obvious by-product of this test is to discover the operating range of your cassette recorder.

DISK DRIVE: Eight pages of the 28 page manual are dedicated to this part of the Diagnosis. This section provides an in-depth explanation of how the disk drives and their controller operate. Model 3 owners should be particular interested as there is very little information available on the disk operation of the Model 3. There is a choice of seven tests: Drive select and disk controller functions, track seek and verify read, formatting, read/write/verify all sectors, read/write verify without erasing, disk drive timer (a tachometer is graphically displayed on the screen) disk head cleaner.

RS-232-C TEST: Connector test, transmit data test, framing test, data loop test, baud rate generator test.

We would like to emphasise that each of these tests can be run independently, or if the user so decides, they can be run on a continuous basis, with each diagnostic report being routed to the line printer. Please be sure to specify for which computer you require SYSTEM DIAGNOSTIC.

Memory Requirement 16/32k	Tape 1 11-1271
TRS-80 Tape/Disk Model 1 & 3	Tape 3 11-1238
SYSTEM 80 Tape/Disk Mark I & II	Disk 1 11-1272
	Disk 3 11-1239

DISK AID — ANOTHER THIRD GENERATION ZAP

This disk investigation and modification program is similar to PROZAP shown elsewhere in this section. The two utilities, both of excellent quality, do have some different features and hence it was considered worthwhile to offer both of them. 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 Esc. to 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 00H. The directory repair feature in DISKAID is probably a little easier to use than PROZAP, although with both programs the results 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 similiar 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 the 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.

Memory Requirement 32k	11-1207
TRS-80 Disk Model 1	
SYSTEM 80 Disk Mark I & II	

CROSS REFERENCE

This program maintains a cross reference of all types of information which requires to be crossed. The information on the items to be crossed is maintained in data statements at line 1000. The reference list must therefore be built up by you, starting with that line. Options in the program include: seeing the pages of data, a page at a time; searching for a specific item in column A (assuming A is being cross referenced to B); searching for a specific item in column B; entering new data; searching column A for a contained string. That is of part number ABCDEF you can only remember BCD, but you need to know whether the full number is on file and what that number is. Type it in and it will find the full number together with a display, you are then able to provide a cross reference.

Memory Requirement 16k	11-1205
TRS-80 Tape Model 1	
SYSTEM 80 Tape Mark I & II	

MINI UTILITY 1 - THE FIRST OF THE FEW?

The trend now is more and more towards composite programs containing a number of different utility commands. There is still a demand for the utility program containing just one feature. Many times in composing a program one wishes that one could change all of the Print statements into LPRINT and all of the LPRINT into PRINT and this is precisely what this mini utility does. It sits at the top of memory, is very short and if you decide half way through or after writing a Basic program that you want to change everything, just load this mini utility and it will do this job for you.

MINI UTILITY 2 - SPEED UP RELOADING

This one comes about by reason of the deathly slow speed of loading and saving data tapes into memory. M.U.2 (Filename - ARRAYS) loads snugly at the top of 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.

MINI UTILITY 3 - SCREEN PRINT FOR TAPE USERS

All disk operating systems come with a screen print facility. The Tandy Model I and the original Video Genie when used with tape do not; hence the requirement for such a small utility. M.U.3 occupies no any memory but stores itself away in an area of RAM that is used only when disks are connected. It is accessed with a non-printable key. It loads in a few seconds under the SYSTEM command and is then resident in memory and can be forgotten. 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 and one always wonders what one did without it. This is be accessed with a non-printable character so that the screen is not spoilt.

Memory Requirement 16K
TRS 80 Tape Model 1 & 3
SYSTEM 80 Tape Mark 1 & II

OUTLINE

ABCDEFGHIJKL
abcdefghijkl

BRUSK

ABCDEFGHIJKL
MNOPQRSTUVWXYZ

ELITE FONT

ABCDEFGHIJKLMNPOQRSTUVWXYZ

ABCDEFGHIJKLMNPOQRSTUVWXYZ

ABCDEFGHIJKLM

IGIAL

ABCDEFGHIJKLMNPO
abcdefghijklhlmnop

ERITAGE

Memory Requirement 32K/DB
TRS 80 DISK Model 1 & 3
SYSTEM 80 DISK Mark 1 & II

CRAYON DELUXE

INTRODUCING
CRAYON DELUXE
FOR THE MX-80 / 100 + PROWRITER

DONT LET THIS SIMPLE NAME FOOL YOU **CRAYON DELUXE** is not a toy but a sophisticated typesetting system which offers complete versatility in creating custom letter-sets and graphics. Written in Z-80 Assembler it is fast, flexible and very easy to use. No program of this kind written in BASIC can compare to it. Computing the bit patterns for 760,320 bits per page of printing demands Z-80 Assembler. COMPARE our features to others.

STANDARD FEATURES INCLUDE

1. Programmable Underlining, even create lined paper
2. Mix WIDE and regular sizes MID-LINE.
3. INVERT any part of the text even MID-LINE.
4. SHORT LINE SEEKING for maximum speed. NO WAITING!!
5. **Reversed Block Capitals Character Set.**
6. **FONTHAKER** - A 15K. Machine Language program which enables you to create your own custom fonts. STORE, RETRIEVE AND PRINT letters INSTANTANEOUSLY Allows 3 1/2 coresident character sets in memory. PLUS a fast easy way to print sample LETTERS and SETS
7. Repeat printing capability without carriage advance even on graphic lines gives *Typewriter Quality* print.
8. Create 100, or any number of copies of High-Res MAIL LABELS or LETTERHEADS with easy *hands off* operation.
9. Complete FORMATTING CONTROLS within the text allow for multiple page printing without operator control.
10. **The sharpest dot matrix print you've ever seen!!**
11. Variable DOT Linespacing control for text documents.
12. **Bit Masking** allows creation of graphs and the graph paper simultaneously. Superimpose any background!!!
13. CREATE Block Graphics in any size and with every set.
14. **FINE LINE DRAWING** for creating real business forms.
15. Create all sorts of special characters and shapes.
16. Continuous WIDE printing in any font or style, Even allows for *partial EXPANDED* from this mode.
17. Uses TRS-80 Pixel resolution to create dot patterns.
18. Contains the *most sophisticated* full screen editor ever devised for a TRS-80 computer. Over 100 commands allow for fast easy editing of Graphics and text.
19. Two manuals totaling 70 pages cover every aspect of the program. Sample print demo's + Cartoon incl.
20. Comes with IWO complete 220 character FONTS to get you started. Others are available at modest cost. See the order form on the back of this brochure.

We plan to support hundreds of custom fonts for this system in the future. Watch our **ADS** each month for notice of additional fonts as they are made available.
CRAYON DELUXE.. THE FUTURE IS NOW
LIBERAL DEALER TERMS AVAILABLE - CALL OR WRITE.

TRAKCESS — ACCESS DISKS BY TRACK

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 minimum 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.

We have held off releasing TRAKCESS for some months while Roxton Baker in association with THE ALTERNATE SOURCE prepared the MODEL 3 Version of the program.

It may be a measure of the value of this excellent Utility, that KIM WATT acknowledges the help it gave him in writing SUPERUTILITY.

We are going to make a special offer on this and combine TRAKCESS (priced at \$79.95) and DISK I/O and OTHER MYSTERIES (priced at \$49.95) for a total price of \$99.95. This offer will hold good until our current stocks of DISK I/O etc. are gone as the new stocks of books will need to be increased in price.

Memory Requirement 48K
TRS 80 Mod 1/3 (State Model)
Disk Drive
SYSTEM 80 Mk 1/II Disk

STOPPER — THE BASIC BREAKPINTER

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.

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 3 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's.

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.

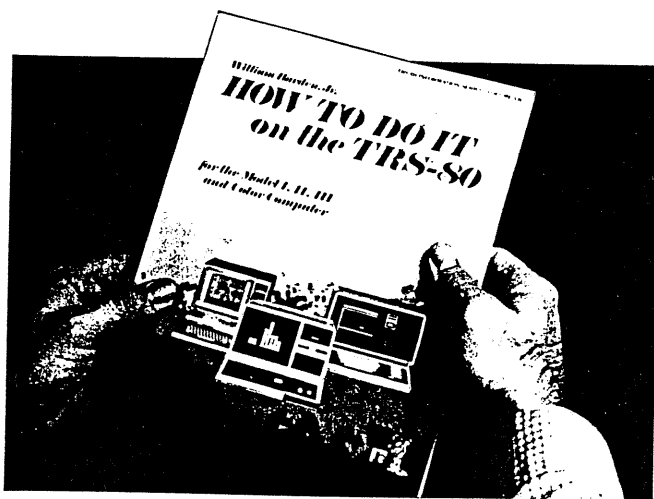
Plus many other handy programs, routines, and revelations are included. Such as a TRSDOS error message display, a disk formatter program, a program to calculate a password for a given encode, a object file load-format display, a file oriented full screen file editor, and a FULL BLOWN smart terminal program.



MACHINE LANGUAGE DISK I/O & OTHER MYSTERIES

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.



HOW TO DO IT ON THE TRS-80®

By WILLIAM BARDEN, JR.

How To Do It On The TRS-80 is one of the most important books a TRS-80 user can own.

Written in plain English, How To Do It On The TRS-80 is a complete user's reference guide for the Model I, Model II, Model III and Color Computer.

Whether it be hardware, software, procedural or everyday common problems, this is your book. Easy to find detailed answers are cross-referenced and "Idiot Proof".

The Instant Assembler

INSTANT ASSEMBLER 2.1 (NEW VERSION)

- from MUMFORD MICRO (as advertised in 80 MICRO)

The Instant Assembler is a powerful assembly language development system for the TRS-80, and this NEW VERSION is better than ever. If you are already an assembly language programmer, the program's unique design will greatly increase productivity. If you are just getting started, there is no better assembler to help you learn machine language programming. Some of the unique features are IMMEDIATE ASSEMBLY, which detects syntax errors as source is entered, and a compact SOURCE FORMAT That allows you to write programs nearly three times as large as other assemblers in the same amount of memory. It produces RELOCATABLE CODE MODULES that can be saved on disk or tape and linked together in memory for large or modular assemblies. It will also ASSEMBLE to DISK, TAPE or directly to MEMORY For immediate debugging with the BUILT-IN DEBUGGER. You can quickly switch from assembler to debugger without losing your source. The built-in debugger will step through your programs one instruction at a time, showing each disassembled instruction and its effects on the registers and memory. It can even use the symbols in your source code when stepping or disassembling. Our new version will load or save both conventional source files and its own condensed source format.

The Instant Assembler package includes six separate programs. The assembler itself includes the editor and built-in debugger. The Linking Loader is included in several versions for different memory sizes. A stand-alone version of the debugger (MicroMind) is also included. MicroMind can be relocated in memory and has commands to single-step, set breakpoints, display or alter registers of memory, find bytes or words, disassemble to screen or printer, convert between hex and decimal numbers, and write SYSTEM tapes. The Instant Assembler comes with a comprehensive 65 page instruction manual with many examples.

Memory Requirement 16/32K
TRS 80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

DEMON

- A most Comprehensive DEBUGGER
from MUMFORD MICRO (as advertised in 80 MICRO)

DEMON (for DEbugger and MONitor) is a new and sophisticated tool with which to explore and debug machine language programs. There are two modes of operation. The STEP mode "emulates" the operation of the Z-80 and allows you to step through any machine language program one instruction at a time, showing the address, hexadecimal value, Zilog mnemonic, register contents, and step count for each instruction. This ability is extremely useful not only in debugging your own programs, but for examining the workings of other's programs. DEMON will even follow program flow right into ROM. The video screen is left unaltered so the program that you are stepping through can perform its display functions unobstructed. STEP mode commands include STEP (trace), STEP to a Branch, RUN in step mode at a variable rate, RUN for a specified number of steps, CHANGE Flags or Registers, EXECUTE a CALL or RST, set BREAKPOINTS in RAM or ROM, and BREAK when a number within a defined range appears in a double register.

Commands in the MONITOR mode (all of which are available from the STEP mode) include HEX Arithmetic, HEX to DECIMAL conversion, BLOCK MOVE, FILL memory, FIND bytes, JUMP to address, DISASSEMBLE to screen or printer, LOAD memory from disk or tape, WRITE memory to disk or tape, FULL SCREEN MEMORY EDIT in Hex or ASCII, and RELOCATE other programs or itself. DEMON also includes a labelling disassembler with EDTASM format output to either disk or tape. This will generate source code from programs in memory which can then be altered and reassembled with your assembler. Screen displays may be routed to your line printer for hard copy. Includes a comprehensive 40 page manual with many examples.

Although we now have available MON 5 the latest upgraded version of MON 4 in our opinion DEMON is the most comprehensive and easily used Monitor available to the TRS 80 programmer.

Memory Requirement 16/32K
TRS-80 Tape/Disk Model 1 & 3
SYSTEM-80 Tape/Disk Mark I & II

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 particular 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.

SYSTEM DIAGNOSTIC — A COMPLETE TEST FOR MODELS I AND III TRS-80

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.

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 expediency it is distributed on a 500 baud cassette, although customers preferring to pay the disk 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.

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 unacquainted 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 x 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.

USE THE LATEST WEAPONS

SBE (Simple, But Effective) is a system for developing machine-code programs for Z80, 8086 and 8088 micro-chips. Versions of SBE are available on TRS-80 and Video Genie, (Z80), and the IBM PC (8086/8088). Further implementations are planned for other machines, including the TRS-80 Model 2000 (80186).

WHAT IS SBE?

SBE is a low-level high-level language. Programs written in SBE look much like BASIC. You EDIT, SAVE, and LOAD them, just like BASIC, but the SBE language is very much closer to machine-code. You can refer to registers, memory locations, ROM, and even individual machine instructions directly. The SBE Compiler turns your SBE programs into raw machine-code. There is no run-time library, or interpreter. Your programs can be as fast and as compact as those produced by Assembly Language — but SBE is an order of magnitude easier to write.

WHY SBE?

- Assuming you can write programs in BASIC, why should you want to write machine-code using SBE?
- It runs faster. Factors of 100 are not unusual. That means that many applications which are simply infeasible in BASIC become a child's play in SBE. This includes games, data management, indexing, editors, compilers and translators, tele-communications, graphics, and so on.
- Total Access to your System. There are many jobs you simply cannot do in BASIC. SBE opens the door to full control of your machine. You can define new DOS commands, write new tape or disk formats, define new BASIC statements, control special hardware add-ons, even support new data types.

- Education. Do you ever feel that BASIC has covered your machine with an asbestos safety curtain? SBE lets you peep behind that curtain, and see what's really going on. Much of what you'll see is not pretty, but SBE's detailed documentation will guide you through the swamp, and bring you out the other side, wiser and with a better overall grasp of computing.

WHAT ARE YOU BUYING?

- Simplicity.** You'll write your first machine-code program in under an hour. Like BASIC, SBE is on-line and immediate. You don't have to learn how to use a new Editor, or a complex Assembler Language, or Linker, or how to create an Execution Module, or how to use a Debug Monitor. With SBE you type in your program, just like BASIC, and you can run it in the BASIC environment. There's just one extra step, the SBE compilation, and that's lightning fast.

- Clarity.** SBE's language is simple, natural, and easy to learn. Examples: (HL, AL, and BX are registers)

```
COUNT=10
IF VAR13 AND HL=VAR2 THEN COUNT-2 ELSE GOTO LABEL
FOR,AL=(BX),BX+1,IF AL<0 THEN NEXT
```

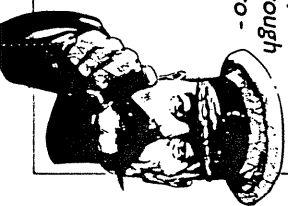
- Transparency.** Debugging is faster by as much as a factor of ten, when compared to Assembly Language. Debugging is on-line, and is in terms of your source program and its named variables. No machine-code monitor is needed. TRON and TROFF statements are used to control the volume of debug data.

- Insight.** SBE doesn't merely document its own specifications. It's a gold-mine of information about your machine, its ROM, and its DOS. As well as cataloging useful addresses and system services, SBE also gives detailed, annotated examples of how to write a BASIC USR subroutine, how to create a DOS command, how to create a new BASIC command or statement, and how to write file-handling applications.

Still hesitating?

Programmers divide sharply into two groups — the professionals, who can write machine-code, and the amateurs who can only use BASIC. The hurdle that divides those two groups is the INITIAL difficulty of putting together and running a first trivial machine-code program. Once over that hurdle, writing complex applications is simply more programming. SBE carries you painlessly through that learning phase, and lets you join the professionals. Games, utilities, networking? You can't possibly compete unless you write machine-code.

YOU CAN WRITE MACHINE CODE



SIMPLE BUT NOT SUPERFICIAL.

SBE is for the professional as well as the novice. Even if you are already expert in Assembly Language, and in system internals, you'll still benefit from SBE's improved clarity and maintainability, from its speed of compilation, and most of all from its vastly superior debugging capabilities. SBE's language does not generate all possible machine instructions, but you can access the more obscure codes (like ENABLE and DISABLE) via macros. So nothing is hidden.

On a 48K TRS-80 the maximum machine-code program is about 10K. This can be saved on disk in a special linkable and relocatable format. It will reload and run at any location. You can link together several separately compiled modules (resolving cross references) to produce larger product modules. On a 64K PC the maximum program is again about 10K. On a larger memory, larger modules can be generated up to a maximum of 32K. Modules are not linkable on PC. Generated programs can run on smaller memory machines, or on other Z80 or 8086/8088 systems.

SBE/PC produces machine-code for the 8086 or 8088, and is a superset of the language of SBE/TRS80, which produces machine-code for the Z80. You can migrate programs running on Z80 to 8086/8088, but not vice-versa. (Migration will require you to rework system and I/O calls). An allied utility from Allen Gelder Software will soon be available which permits existing Z80 disassembled machine-code to be converted to SBE/TRS80 source, for subsequent conversion to 8086/8088.

THE PRODUCTS

SBE/TRS80	TRS-80 48K, Disk \$249.00
SBE/PC	IBM PC 64K, Disk \$299.00



TRS-80 includes Models 1, 3, and 4, and TRS-80 derivatives, like Video Genie, PMC80 (Any DOS).
IBM PC includes XT, Junior, on PCDOs.

southern
software

NEWKEY- A Gaphics Utility

We publish a certain number of basic (in the sense of straightforward) programmes from time to time, and NEWKEY falls within this category. It is only compatible with Tandy Model 1 and System 80. Newkey is a nice program because it is easy to use.

What it does essentially is to turn a normal keyboard into a graphics keyboard. A number of other types of microcomputers can print a graphics character on the screen at the touch of a key, at any they do not require the user to use Chr\$(n). Newkey turns the Tandy 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 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 Basic program. It may be saved to tape and reloaded as required.

SnapInvoice

This is a no frills approach to invoicing. It is essentially a form of Sales Ledger and thus ideally suited to buisness.

It allows the obtaining of a hard list of customers, issuing of Invoices, Credit notes and statements, and will have countless applications and uses in the office.

Suitable for use on the Tandy Models 1,111 and Model 4; you will require in addition to your program disc, two plain formatted discs.

"PRODAT"

INTRODUCTION

The aim of the program is to enable the user to assemble a table of data with rows and columns of figures. Additional functions permit sorting or changing items in the table, calculations such as averaging and differencing and production of printed copy. The table can then be saved on disc and used as the basis for graphs, regression analysis, linear programming etc.

PROGRAM SIZE AND ENVIRONMENT

The program occupies 18K on disc and 17.5 Kbytes of memory - so make sure that you have plenty of memory - at least 32K is essential. The program is written to use Disc BASIC commands and cannot be used in a tape-based TRS-80. The operating system can be TRSDOS, NEWDOS, LDOS etc but one operation, the reading of directories from disc, requires the program to know which system is in use. This is set initially by a variable "DOS" in line 25 which has the value 0 for Model I TRSDOS (function unavailable), 1 for NEWDOS, 2 for LDOS and 3 for Model III TRSDOS. Please set this variable as required for your system or leave it as zero if you are uncertain.

COMMANDS AVAILABLE

An alphabetical list follows, see Appendix 1 for a list in functional order.

		Section	Page
Block copy	BC	8.3	8
Bring forward data	BF	8.3	11
Cumulative calculation	CU	8.3	12
Difference calculation	DI	8.3	12
Display input commands	IX	8.1	5
Display main commands	CM	8.1	5
Exchange two columns	XC	8.3	9
Exchange two rows	XR	8.3	9
Format for printing	FO	8.4	14
Hardcopy output	HC	8.4	16
Input by columns	IC	8.2	6
Input by rows	IR	8.2	6
Invert column	VC	8.3	9
Invert row	VR	8.3	9
Kill file	KI	8.4	17
List last line	LL	8.4	14
List one column	LC	8.4	14
List one row	LR	8.4	14
List whole table	LM	8.4	14
Minimum/maximum	MX	8.3	11
Mode change	MO	8.1	5
Moving average	MA	8.3	12
Name all columns	AC	8.5	18
Name all rows	AR	8.5	18
Name one column	NC	8.5	18
Name one row	NR	8.5	18
Prompt enable/disable	PR	8.1	5
Quit run	QU	8.1	5
Save to disc	SV	8.4	16
Save with new size	SZ	8.4	17
Serialise column	SC	8.2	7
Serialise row	SR	8.2	6
Sort row/column	SO	8.3	10
Status of table	ST	8.1	5
Sum/mean/std.deviation	SA	8.3	11
Transformations	TR	8.3	9 [Has sub-command menu]
Zero one column	ZC	8.2	7
Zero one row	ZR	8.2	7
Zero whole table	ZM	8.2	7

SUMMARY OF COMMANDS

A1.1	SERVICE COMMANDS
CM	Display main commands
IX	Display input commands
ST	Display status of table
PR	Enable/disable prompt
QU	Quit run
MO	Change mode
A1.2	INPUT COMMANDS
IR	Input by row
IC	Input by column
SR	Serialise row
SC	Serialise column
ZR	Zero fill row
ZC	Zero fill column
ZM	Zero fill table
A1.3	MANIPULATORY COMMANDS
BC	Block copy
XR	Exchange rows
XC	Exchange columns
VR	Invert row
VC	Invert column
TR	Transformations
SO	Sort rows or columns
SA	Sum, mean and standard deviation
MX	Minimum and maximum
BF	Bring forward
CU	Calculate cumulatives
DI	Calculate differences
MA	Moving average
A1.4	OUTPUT COMMANDS
LM	List whole table
LR	List selected row
LC	List selected column
LL	List last worked row or column
FO	Format for printed output
HC	Hard copy output
SV	Save table to disc
SZ	Save and vary size
A1.5	NAMING COMMANDS
NR	Name selected row
NC	Name selected column
AR	Name all rows
AC	Name all columns

SMART TERMINAL — HOOK UP ANOTHER COMPUTER

This program is intended for users who wish to use either their TRS-80 computer as a terminal to another computer, connected via the RS-232-C and a Modem. When connected or "logged on" to another computer the 80 is in communication status. Any character typed at the TRS-80 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 one 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.

This SMART TERMINAL program has been written to include a number of special features. In addition to supporting lower case (if your TRS-80 has been modified) the program can also be set to receive graphic characters. Data received by the interface can be displayed, printed on a line printer and stored in memory. Memory files may be built and saved on disk. Files may be loaded from disk, stored in memory and then transmitted. SMART TERMINAL will change the baud rate under software control, furthermore, an automatic test is continually carried out internally to make sure that the RS-232-C interface is operating correctly and if not a warning is given. 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 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.

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 char.
EM: Erase memory	RC: Read cassette	TR: Automatic trans.
TM: Type to memory	SC: Save cassette	NT: Stop auto trans.
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 stats.	EX: Exit to Basic
LI: Set to first mem. line	CB: Change baud rate	OS: Exit to DOS
SW: Reset sense switch.		

Due to the differences in RS-232-C configurations, this program is not suitable for the SYSTEM 80.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model 1 & 3

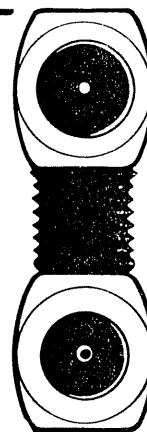
Tape 11-1301
Disk 11-1304

TELCOM — COMMUNICATIONS AT AN ECONOMY PRICE

Like SMART TERMINAL, TELCOM is a sophisticated machine language program that gives your TRS-80 or SYSTEM 80 "Smart Terminal" capability. It is menu driven and extremely simple to use. In the terminal mode, it supports upper and lower case characters, spooled printer output, internal character echo, RAM storage of data with character count, transmission of up to 8 programmable automatic (log on) messages, and 10 programmable character keys for special codes not normally available from the TRS-80 keyboard. Other modes that may be quickly selected from the menu include: transmit a disk file, receive a disk file, examine or modify the data format (baud rate, bits per word, parity, and stop bits) save RAM buffer on disk, define a "halt/resume" protocol for file transmission, define a buffer "open/close" protocol for saving only selected data, and save the entire TELCOM program as configured on disk for later use. Since TELCOM will send or receive a full 8 bit data word, TRS-80's may exchange machine language or Basic programs without the need to convert them to ASCII. This saves half the time required to generate and exchange a 16 bit checksum to verify accurate transmission. If the computer on the other end is also running TELCOM, it will inform you if errors have occurred in transmission. This program is supplied on disk, it does not have all the feature of the preceding program, however we are able to supply TELCOM at what we think is a very competitive price. SYSTEM 80 owners should not that it is not compatible with the RS-232-C on their machines.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3

44-1303



COMMUNICATIONS



ATERM 1.4

— FUNDAMENTALS FOR TERMINAL COMMUNICATION

ATERM is a terminal program with the "smarter" features on its bigger brothers. It is full-duplex compatible, supports all 128 ASCII characters including lower case (if your 80 has been modified) and a Bell sound on the cassette Aux line from your computer.

You can set the baud rate, parity, word length and stop bits from the keyboard, even while receiving. Line printer output is buffered in memory to allow slow printers to be used without nulls. ATERM 1.4 is completely compatible with Tandy's Communications Package. Regrettably, ATERM 1.4 is not compatible with SYSTEM 80 machines due to the difference in RS-232-C configurations.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3

40-1302

Communications for the SYSTEM 80 Computers

While TELCOM II is our idea of the ideal communications software, it is not available for the System 80. This is because the SYS.80 uses a non-standard RS 232 and communication software written for Model 1 will not run.

More and more computer users are discovering the joys of "hacking over the wires", so MOLYMERX is releasing MODEM 80, a very Powerful but perhaps slightly less easy to use (than TELCOM) Comm. program for the SYS.80.

The description that follows is from our U.K. catalogue so for "GENIE" read "SYSTEM 80".

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.

A major advantage of Modem/80 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.

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.

Modem/80 is strictly disk orientated.

TELCOM

- from MUMFORD MICRO (as advertised in 80 MICRO)

TELCOM I has most of the features needed to communicate with bulletin boards, time share systems, or for file transfers between two disk-based micros over modems or direct wire. It is menu driven and extremely simple to use. Functions include transmit a disk file, receive a disk file, save received data on disk, examine and modify UART parameters, 8 programmable log-on messages, automatic checksum verification of accurate transmissions and reception, and many more user conveniences. Supports line printers, lowercase characters, Xon/Xoff protocol, and programmable character keys.

TELCOM II however is an expanded version of this program for the most demanding telecommunications applications. It maintains the same ease of operation and all the features of our original program, but includes many enhancements. The terminal mode now has a HELP mode and a large SPOOLER for simultaneous printer output at high baud rates. You can LOAD disk files into the memory buffer from within the terminal mode, TYPE into the buffer, TRANSFER the buffer with a single command, and SEND Files a line at a time. You can even VIEW the buffer or data that has already scrolled off the screen. TELCOM II has 10 different 40 character PROGRAMMABLE MESSAGES that can be sent with a single command for auto log-on or auto dialing, and the messages can include control codes and delays. It also has 5 different character translation tables for filtering and compatibility with different systems.

TELCOM II also includes an ERROR CORRECTION FILE TRANSFER MODE which is compatible with the LYNC program available on CP/M systems and the IBM PC. TELCOM II will exchange disk files with any computer running this protocol (including another TRS-80 running TELCOM II), and will automatically detect and correct any errors in transmission. Files can be sent to or fetched from an unattended computer. The extreme ease of use that TELCOM I is known for has not been compromised. Reconfiguration of the programmable features is done internally from clear menus for fast, easy operation. Both versions of TELCOM come with complete instruction manuals, which are available separately for \$5.00 to help you decide which program is best suited to your needs.

TELCOM I & II

Memory Requirement 16/32K

TRS 80 Disk Only Model 1 & 3

SYSTEM 80 Disk Only Mark I & II

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.

Using the program will produce coded text similar to the accompanying illustration. After enciphering, the text is in groups of five letters. The program will of course decipher text, but various items of information have to be known before this can be done. 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)

This program is offered for two markets. First of all for those customers who like a complete and accurate simulation of a complex function or who like to play around with codes and coding and secondly for 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 communicate by Telex may exchange information with complete confidence as to security.

A quantity of background information is given in the program manual regarding the operation of the Enigma used during World War II. 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, line printer or to disk storage. Input is from the keyboard or a disk file.

The program is compatible with both disk and tape.

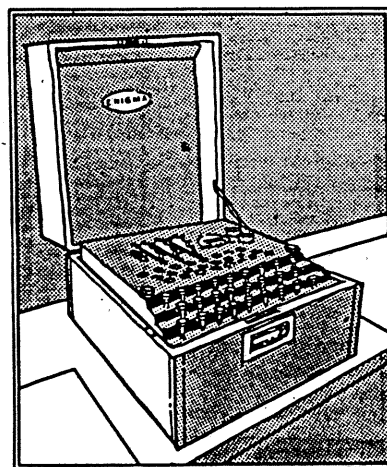
ENIGMA is a most fascinating program. It has the rare attribute for a microcomputer program, in that it fulfills a professional application, but also provides a great deal of fun and enjoyment for the person using it as a hobby or as an amateur cryptographer.

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 VEKEV 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.

Memory Requirement 16/32K
TRS 80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II



LDOS

VERSION 5.1
THE TRS-80™ OPERATING SYSTEM
MODEL I AND II

LDOS — THE FIFTH GENERATION OPERATING SYSTEM

Existing TRS-80 and SYSTEM 80 users will no doubt be familiar with TRSDOS, VTOS, NEWDOS+ and NEWDOS 80. Each of these systems carry associated features, this is not surprising as generically they derive from the one source, namely Randy Cook's original version of TRSDOS. LDOS is a major departure from this approach in as much that it was written by no less than 8 first rank programmers at a cost of approximately 1/2 million dollars. The important point is that the LDOS team were able to plan their operating system with all the preceding DOS's in mind being aware of the best parameters of each. The result is a disk operating system which we feel should become the industry standard.

Documentation has always been a gripe of many computer users. It has either been framed too heavily in "computerese" or presented with serious omissions. With these criticisms in mind the LDOS programming team seen to have excelled themselves. The documentation that accompanies LDOS is in a binder encompassing some 300+ pages 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 an example if necessary.

The team responsible for planning LDOS obviously gave a great deal of thought as to what it should contain. They have avoided presenting features which are readily available on other operating systems, and are in the main bug-free. By avoiding this unnecessary duplication, sufficient space has been left on the disk for new utilities and features. These features can be split into the following sections: Library Commands, Utilities, Device Drivers, Filters, Job Control Language, and LBASIC.

It is beyond the scope of this catalogue to give a step by step description of each of the commands and utilities, suffice to say that many of the features are enhancements of existing commands used in other systems. To overcome this problem we have available a pamphlet describing LDOS 5.1 for both the TRS-80 Model 1 & 3 and SYSTEM 80 Mark I & II.

LIBRARY COMMANDS:

APPEND	ATTRIB	AUTO	BOOT	BUILD	CLOCK	COPY
CREATE	DATE	DEBUG	DEVICE	DIR	DO	DUMP
FILTER	FREE	KILL	LIB	LINK	LIST	LOAD
MEMORY	PROT	PURGE	RENAME	RESET	ROUTE	RUN
SET	SPOOL	SYSTEM	TIME	TRACE	VERIFY	

UTILITIES:

BACKUP	CMDFILE	CONV	FORMAT	LCOMM	LOG	PATCH
REPAIR						

DISK OPERATING SYSTEMS

DEVICE DRIVERS:

- JL: The LDOS Joblog feature. Sends a list of all commands and error messages along with a time stamp to a specified file or device.
- KI: This device enables certain keyboard related features such as Type Ahead, Screen Print, high speed key repeat, and CLEAR key recognition used with other LDOS features.
- RS232 Allows the operator full control over the RS232 device.

FILTER PROGRAMS:

- KSM: A keyboard filter routine that allows the Keystroke Multiply feature of LDOS to read in predefined files, assigning phrases or character strings to be used as keyboard input when the CLEAR and specified alphabetic key are pressed together.
- MINIDOS: A keyboard filter that provides constant access to certain LDOS commands such as Directory, Free Space, Kill, Debug. An immediate Top of Form function is also provided for use with line printers.
- PR: A filter for use with line printers. It provides for the setting of lines per page, physical page size, line width, line indent and wrap around, constant indent of the left margin, a one character translate feature, tab expansion, added line feed, and a hard form feed during pagination.

LBASIC:

The following features are available in LDOS Disk Basic:

Upward compatibility with Microsoft Basic
Single key commands to edit or list the first or last program line, to list the next or previous program line, or to list the first or last program line.
Single character abbreviations for some commands.
Single stepping through program execution.
High speed load and save.
Run multiple programs with common variables. Programs may also be run starting at a specified line number.
Block (variable length) files are supported.
LDOS commands may be executed from Basic.
Built in string array sort.
NEW STATEMENT: SET EOF allows the user to adjust the End of File marker for Random files, and reclaim disk space beyond the new EOF marker.
NEW STATEMENT: RESTORE nnnn restores the data pointer to a specified line number.
Variable and line number cross reference.
Program renumbering.

Memory Requirement 32k	Model 1	43-1801
TRS-80 Disk Model 1 & 3	Model 3	43-1802
SYSTEM 80 Disk Mark I & II		

DOSPLUS

*Experience
the
Power*



DOSPLUS 3.5

DOSPLUS 3.5 is the latest, and by far the crowning effort, in the DOSPLUS family of TRS-80 Disk Operating Systems. This system is the PREMIER Model I/III DOS. No other system even comes close.

DOSPLUS 3.5 is as simple or as complex as you want to make it. If you use it to run standard hardware the differences between this and other DOS's will seem minor. But if you get into the inner parts of the system and begin using it to its full potential, you will realize that you are using the most flexible and powerful DOS ever written.

DOSPLUS 3.5 Features

- (1) DOSPLUS 3.5 has an "external" device structure which allows other devices and peripherals to be easily attached to the system. It features TOTAL device independence; to the point of allowing output to ANY device on almost all commands.
- (2) 3.5 features extensions to the range of legal characters that are allowed for file specifications. Filespecs may now use numbers and many other non-alphabetic ASCII characters freely.
- (3) 3.5 offers filtering on any device and includes drivers that support these filters. Filters can be interpreted from simple text files (no need to program in assembly to create a filter).
- (4) System offers "custom" configuring touches in area of blinking cursor, cursor character, caps lock, logo display, and time and date prompts.
- (5) 3.5 allows complete freedom in renaming drives and devices to any non-reserved two character name. For example, drive could be renamed to drive A, etc.
- (6) Multiple commands on the same line are supported with the implied carriage return.
- (7) Parameters relaxed. 3.5 only requires you to enter the parameter name up to as many characters as make it unique from the others in the list.
- (8) TRSDOS calls @RAMDIR and @FILPTR are now supported for an unprecedented level of TRSDOS compatibility. Model I supported in these areas also.
- (9) Commands are now evaluated, not parsed. Allows user to specify the command line in any order (using delimiters).

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- (16) Alternate keyboard driver included. Supports full ASCII character set, filtering, and MacroKeys. Built in Keyboard driver features rapid repeat rate.
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- (21) Double sided drives supported with automatic recognition (if disk drive is INITed). Speeds up and simplifies switching between single and double sided media.
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- (45) Filters included for Epson printers, DVORAK keyboard. Also patches for most common programs.



smal-LDOS

smal-LDOS - OFFSPRING OF LDOS

LDOS was under development for over a year at a cost of 1/2 a million dollars. It provides the Tandy and System 80 user with an extremely professional DOS which benefited greatly from being written after many of the other DOS's. After LDOS had been on the market for some time, John Harding in England approached Logical with the idea of producing a stripped down version of LDOS primarily for the System 80 as these machines are not provided with a DOS of their own. The result of long hours of deliberation as to the inclusion or otherwise of various features has resulted in a well-balanced DOS with many features of the original but which excludes many of the complexities of LDOS. It is supplied with a comprehensive manual covering not only the DOS but also the Disk BASIC which is included in the package.

smal-LDOS has application also to the Tandy owner who has no experience with LDOS.

We include a coupon that makes it financially easy for a user to upgrade to LDOS. In fact this is the first operating system provided for these machines that make it possible to upgrade to a full DOS without large financial penalty. Taking the \$35 value of this coupon (redeemable from MOLYMERX) the effective price of smal-LDOS is only \$130.00

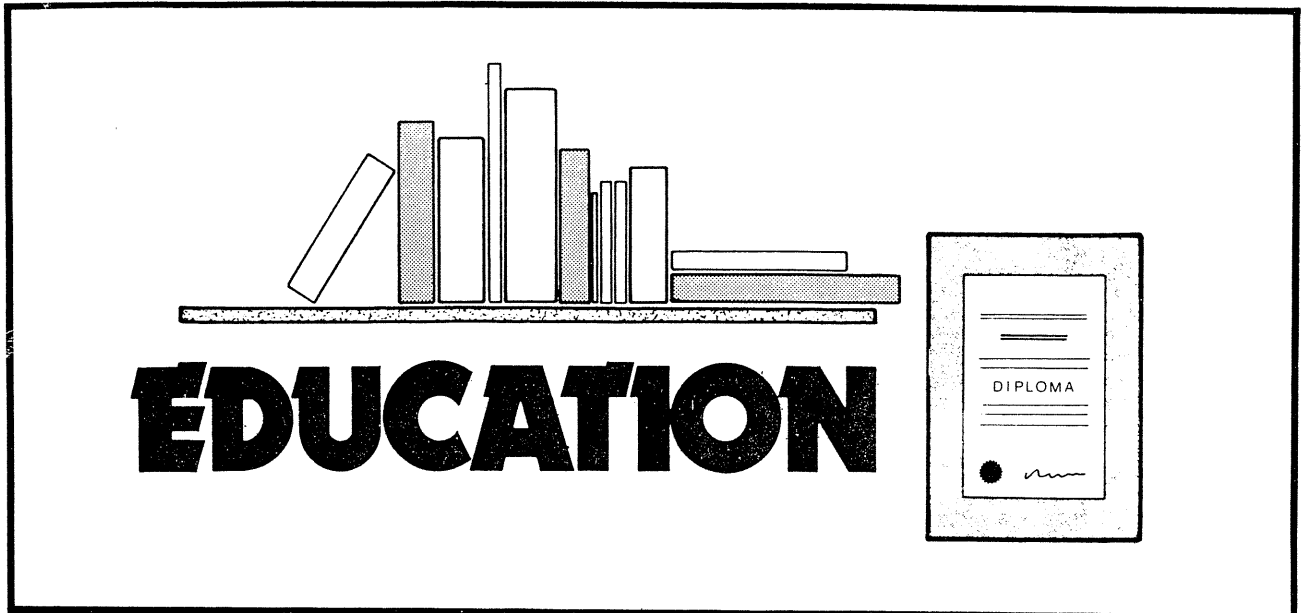
Elsewhere in this catalogue you will find very full descriptions of LDOS and we do not need to repeat them here. The Library commands in smal-LDOS are :

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	FORMAT	RDUBL (These provide for double density)
CONV	HITAPE	REPAIR
	PDUBL	

In addition to the above, one filter program (for Printer) is included and a Keyboard Driver. Finally smal-LDOS contains a full disk BASIC including a high speed sort but excluding Cross-reference and Renumber. Some of the commands lack some of the full features of LDOS but in general they carry out the same functions



PILOT — AN 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 tape 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 Wirral Pilot distributed by use is an extensive integer subset of the common Pilot. For the uninitiated, Pilot is not a keyword language like Basic, instead it uses single or double-letter commands known as op-codes. Each instruction is built up by adding conditioners and/or modifiers to the op-codes 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 the 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 1-9) Execute if n matches the answer counter, e.g. first time through an accepted 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.

Memory Requirement 16k
 TRS-80 Tape Model 1
 SYSTEM 80 Tape Mark I & II

11-2410

CORPLAN — EXPERIENCE BUSINESS IN ACTION

CORPLAN was written to simulate a business environment. It has already received extensive use as a training program for schools, colleges, and businesses. Essentially, CORPLAN is an entrepreneur's business game. The player takes the part of the Managing Director of a mythical company which manufactures an equally mythical product called a "Corple". The business, which you are called upon to name, sells to a market over which it has a considerable degree of control. You are free to change the company's manufacturing, selling and financial policies to suit your objectives. The player is also called upon to make decisions as to the hiring and firing of employees, capital investments and many other factors which go to make up the success or failure of a business. On these decisions will depend the ultimate fate of the company. The game may be played either singularly or by a number of players. In the latter case, the players make up the Board of Directors and each player is appointed Director of Finance, Director in Charge of Production and so on. A unique feature of the game is that the player may set his own criteria by which a win or loss is determined. In operation you are thrust into a position of deciding policy. Whether you go for growth by buying more plant and machinery, taking on workers and salesmen and advertising heavily, or adopting the philosophy of simply going for survival. You have to raise cash by borrowing, or by issuing shares. You must know when to pay dividends to the shareholders best advantage. You plan production together with making policy. You advertise, set prices and understand how to maximise profits. To enable you to monitor your day to day progress, a set of accounts is screened showing materials, production, profit and loss account and balance sheet. The manual accompanying this game is extensive. You are taken step by step through the game and in fact a specimen run is even supplied. Although the game comes on tape, it is written in Basic and may easily be saved to disk, an advantage as it is almost 16k long. No previous knowledge of finance or accounting is needed to enjoy CORPLAN. It is worth stressing that Corplan is an ideal program for assessing students and for conducting competitions.

Memory Requirement 16/32k
 TRS-80 Tape/Disk Model 1 & 3
 SYSTEM 80 Tape/Disk Mark I & II

Tape 13-2403
 Disk 13-2417

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TABLES — LEARN MULTIPLICATION THE FUN WAY

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) have fun at the same time. Actually, it is rather hard to describe the program because it 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 will respond that he wants to have a chat. This leads into a whole array 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. Even if you try to avoid learning their multiplication tables, this program is sure to interest them, if not educate them.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2414

MATHS SPEED TEST — EDUCATIONAL AND FUN

This program is a clever attempt to make basic mathematics a little more palatable than it normally is. The program gives you up to 20 questions at a set speed. It records the length of time it takes you to answer and keeps a running note of the latest score. It is, therefore, essentially both a game and an education. The first level is simply questions of the 6 x 12 variety. The second level is a choice of questions on either addition, subtraction, multiplication, division or a mixture of them all. These questions are somewhat harder, although all the questions generated by the program are capable of being worked out mentally. In other words, use of a calculator is considered cheating! This program will support sound.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2407

TOUCH TYPING COURSE — A SUPERIOR TYPING COURSE

This course is designed as a complete suite consisting of eight separate and different lessons. The suite offers a methodical learning process which gives the necessary instructions 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 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 lessons. 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. 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 lesson 8 in high speed typing. 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. Exercise 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 accidentally 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 text 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, printer's 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 this copy 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 taken 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 either tape or disk.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model 1
SYSTEM 80 Tape/Disk Mark I & II

Tape 11-2415
Disk 11-2416

EDUCATION

FRENCH VOCABULARY — AN AID TO LEARNING FRENCH ON YOUR COMPUTER

This program, which teaches the vocabulary of French has been written with simplicity and efficiency in mind. It is highly recommended as a mandatory exercise before your next trip to French Caledonia, or for the French student up to Junior Level (10th grade). Included with the program are 10 vocabulary data programs each containing 300 French/English word pairs. The total of 3000 word pairs provides a comprehensive basic French vocabulary. Each French word, or course, is matched with the English word, giving its meaning. If there is more than one meaning the most common is given. The nouns, which make up well over half the vocabulary, include the gender and are mostly arranged according to subject matter. This greatly aids learning. Each set of 300 word pairs is subdivided 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 are words that would be required in and around town. One group is assigned to airport words and so on. 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 in either the English/French or French/English direction.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2412

LANGUAGE TEACHER — LEARN THE BASICS OF A FOREIGN LANGUAGE

This program is one of a series that we import from Acorn Software in the United States. LANGUAGE TEACHER offers hundreds of word combinations, verb conjugations and phrases. You choose the topic of the drill and whether it is foreign language-to-English or vice versa. There is the option of having multiple choice questions as well as being retested on missed items. The program provides a running percentage of correct answers. Full print capability and a great deal of "human engineering" has gone into enhancing each of these programs. Teachers will appreciate the ample documentation and the ability to get printouts of quizzes.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

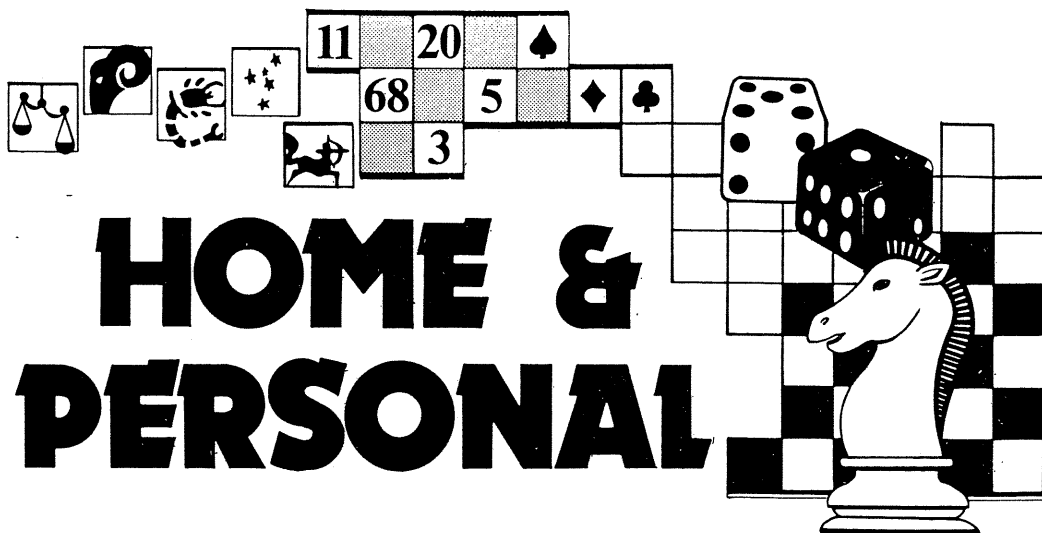
French 40-2411
Italian 40-2418
German I 40-2419
German II 40-2420

MULTIPLE CHOICE QUESTIONS — EASE THE BURDEN OF COMPILING TESTS

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 program will not accept any entries except those for True, False, and Doubtful. After the questions have been answered, the machine will report on the number of correct entries, with a correct answer yielding one mark, an incorrect answer losing a point, and a doubtful answer remaining unmarked. At the completion of the session, the students total marks and percentage achieved can be displayed.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

11-2409



HOME & PERSONAL

DOMINOES — FULL GRAPHICS AND REALISM

The graphics of this game are excellent and show the bricks exactly as they appear in a normal game. The usual Dominoes rules apply, the game can be played against the computer or the computer can be made to play itself. Each player is given 7 bricks, the player, of course cannot see those held by the computer, although there is a facility for "peeking". It should be stressed that the computer cannot see your bricks, hence it is unable to cheat! As play progresses, the bricks are laid end to end, automatically turning corners as the end of the screen is met. If you cannot lay a brick you pass (called "knocking") and the winner is the one who lays all 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 this game quite addictive - probably because the games do not take long and the activity is fast and furious - highly recommended.

Memory Requirement 16k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-2628

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 the cards so that when a subsequent card is turned over he may match it. The 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. The player or players select cards from various positions which are displayed and the player must remember what they are. They are then covered by the computer and another turn is taken. When the player thinks he can remember a match, he can "call it" and see whether or not he is correct. The player with the most pairs at the end wins. PELMANISM is an easy game to play, ideal for some of the younger members of the family. Understandably, a strong "gambling" element may be introduced if the players so decide.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2626

KNIGHT DELUXE — A CHALLENGING TOUR OF THE CHESSBOARD

KNIGHTDELUXE is a program for fanatics of the Knight's tour on the chessboard. The following functions are available:

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 - this stretches into the millions . . . Even small 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 a line printer or simply counted. For the enthusiast, this program remains a serious study of the Knight's Tour puzzle.

Memory Requirement 32k
TRS-80 Disk Model 1
SYSTEM 80 Disk Mark I & II

11-2639

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 is played on a similar board. The author Dr Shafto, who also wrote the DRAUGHTS program listed above, says it is an ancient oriental game. 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 the board.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

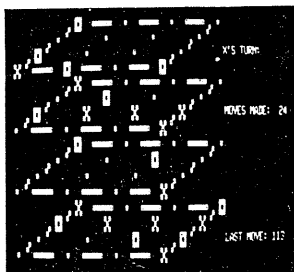
11-2624

QUAD — MIND BENDING

Quad is three dimension 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 and 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 his skills.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

40-2645



DRAUGHTS — AN EXCELLENT VERSION OF THIS POPULAR GAME

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. As far as we can determine, 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. 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. Levels of play can be changed during the game and it is possible to set up specific board games for consideration and it is also possible to cancel a previous move.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2629

KUBIK — THAT CUBE AGAIN

Rubik's Cube does not need an introduction, it took the country by storm some time ago. A number of computer magazines have published solutions to the Cube. Despite this, some people will prefer to purchase the program ready made and with full TRS-80 graphics to illustrate all the various permutations. A number of functions are available with this program: a position may be saved either to disk or tape so that the user can restart at some future time. You may enter you own position and then address the Cube to turn clockwise or anticlockwise, or swivel to a different angle. In effect, you can freely manipulate the Cube from the keyboard. We found the most rewarding command was to instruct the computer to solve the Cube. However, in view of the millions of permutations possible it is simply not possible to state how long this takes. 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, an infinitum.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2633

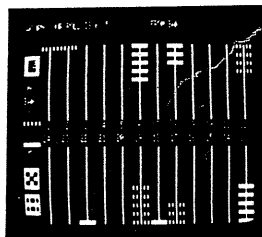
GAMMON CHALLENGER — BACKGAMMON WITH SOUND

This version of the game is a formidable opponent. We are told that it has already beaten the Backgammon issued by Hayden Publications and Instant Software. GAMMON incorporates three levels of skill. An additional feature is that an extra level is available. With this option the program plays with the skill of Level 1 which is the highest, but before each roll of the dice, the machine enquires whether you wish to specify the roll. This is a great feature in that it enables you to study the game. The graphics are good, the dice being represented by two cubes. As a safety feature, the screen may be redrawn if ever it is accidentally erased. Some of the more important features are as follows:

1. The board may be saved and recalled for later use.
2. The board may be set up by the user, in this manner, the computer's response to given tests may be studied.
3. Sides may be changed so that you play the computer's game and vice versa.
4. The skill level may be changed during the game.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

40-2644



SAM LLOYD — A PUZZLE

While KUBIK is designed to test your imagination on a 3 dimensional plane, SAM LLOYD is constructed along more traditional lines. At one time or another we have probably all encountered one of those small block puzzles, a set of 15 small blocks set on a two dimensional plane whereby the user has to manipulate them to form word, pictures, or some given sequence of numbers. SAM LLOYD is based on this very same premise, offering 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 2nd and 3rd options are concerned with creating your own puzzles. This is done using the cursor keys to draw a picture, or for that matter, anything on the screen. When you are satisfied with the design the computer will then compile the design permitting you to save it on tape for future use. The last two puzzles require a little more explanation. The first is 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. Or alternatively, he can instruct the computer to find the solution. The final command is a picture puzzle, where the blocks when arranged form a picture. This option will probably be of the most interest to purchasers as it reveals TRS-80 and SYSTEM 80 graphics at their highest level. The picture puzzle is that of a house and if that is not enough, a data tape is supplied which contains data for four pictures, namely a mountain scene, a TRS-80, a bear and a message.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2634

MILES PER GALLON - SAVE MONEY ON YOUR CAR

There have been a number of programs which purport 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, in the main they have been file handling exercises which simply keep a record on the computer rather than on paper of the miles per gallon and other performance factors. This program is considerably more sophisticated. Chris Wilkinson, the author of MILES PER GALLON has based his research on a statistical approach known as Kalman Optimal Recursive Techniques, or simply Kalman filtering.

The program, when supplied with details of fill ups, calculates the miles per gallon and compares this with the expected value. 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 message for the first run or two.
3. NUMBER OF EVENTS TO BE FLAGGED: The decision must be made as to how many events such as oil change, point adjustment, brake 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 requested, 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 this will obviously affect the consumption.
6. VARIANCE OF MEASUREMENT: The default is 0.4. This 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 expected miles per gallon, a short term message will be displayed.
8. THRESHOLD FOR LONG TERM ALARM: The default is 2.53. The longer 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 complete 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 build-in variances are allowed for as explained above, but gross errors in input will cause gross errors in output. It is probably true that the more frequently you buy petrol and enter this information into the program, the greater the accuracy and efficiency of your results. 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 disk.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

11-2638

SHARE ANALYSIS — INVESTMENT ANALYSIS

Investment analysis is not easy. Even with a good calculator, long boring hours can be spent in determining the necessary "indicators" of market action. Then graphs have to be drawn to get an extended view of what is going on. It is only then that the investigator can get an overall picture upon which to base a 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 as infrequently as he wishes. This is kept in a datafile and is available at all times. A useful feature of the program is that it provides a symbolic representation of probable Stock Market movements. It fills the screen up with up-arrows, down-arrows and hyphens. These indicate probable market movements, with the hyphens indicating that insufficient indicators are available to assist you in your analysis. A text file is supplied which is an account of how the data is used to prepare the indicators and how the indicators are used to imply market trends. The program obviously requires the input of various indices. This information is obtainable from the financial section of your local paper, or in the financial section of the Australian Financial Review. We have found this to be a useful program, and while it will not guarantee you success on the Stock Exchange, it will certainly be of some assistance.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

11-2635

SHARE PORTFOLIO — A DISK MANAGEMENT PROGRAM

This program allows for the straightforward management of your share portfolio, we recommend that it be used in conjunction with Share Analysis. The main menu of this program provides five choices:

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

Each of these are 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 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 then 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, giving your the purchase price and inviting 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.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

11-2636

MONEY MANAGER — A FINANCE PACKAGE FOR PERSONAL AND SMALL BUSINESS USE

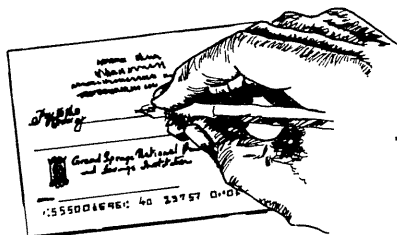
MONEY MANAGER is a complete management tool for all your budgeting activity enabling you to effectively monitor your income and expenditure. The outgoing money is categorised into accounts that you design according to your needs. It provides a means of keeping complete, accurate records including itemisation 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, suppliers, departments stores, and similar entities. All transactions can be broken down so that individual expenses 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 the menu as follows:

- | | |
|-----------------------------------|----------------------------------|
| Add New Entries to the File | Review categorised entries |
| Delete/Modify Cheque book entries | Review deposits |
| Review and 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 spent on what. This decision is best made in consensus with your Accountant. Where it is invaluable is in monitoring how well you are keeping to your budget.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

40-2647



LOAN

This is a loan amortization program for loans of all types, including mortgages. You are called upon to enter the amount of the loan, how many payments are to be made and the interest rate. The computer calculates and displays the amount of each payment and the total interest paid, which is fairly straightforward. However, enter the month and the year that the loan or mortgage will (or has) started and a complete Amortization schedule will be displayed, containing the month and year each payment is due, the total monthly payment, how much of that is for interest and how much for the principal, plus the amount of the remaining principal. For peace of mind you are better off without it but it is a very good program for those who need this type of data.

Memory Requirement 4k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2640

FARMER BROWN — STRICTLY FOR CHILDREN

This program does not pretend to be a program for adults, although the graphics are so good that many adult programmers will wish to investigate the techniques used in this 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. Sound is included in the program.

Memory Requirement 16k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-2630

COMPUT-A-ORGAN — YOUR COMPUTER BECOMES AN ORGAN

This program literally turns your computer keyboard into a 2½ 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 your TRS-80 or SYSTEM 80 keyboard are used in a logical way and they are made identical to the keys of the instrument. To generate sound, all that is necessary is to connect a mini-amplifier to your cassette output. For the more electronically minded, we have included a free circuit diagram on how to build your own sound box.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2604

CHEQUE BOOK — A SIMPLE APPROACH TO HOME FINANCES

This 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 credits, re-reading current data, making alterations, recording a new data file, reading a data file and maintaining a running bank statement. The actual display is split into four headings, notably: Item, Debit, Credit and Balance. As entries are made, the balance is immediately updated. The second part carries out mortgage calculations and supplies the usual information as to monthly, interest and tax gains 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 account, the interest rate and the period and supplies at the end of the investment and the total profits that will be made. The final section is designed to calculate the investment potential or regular monthly payments into a SAVE program. Input is the monthly payment interest rate and expected term and the program caters for single persons or a married couple. Overall, a compact and easy to use program.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2606

MUSIC MAGIC — CREATE AND PLAY OR ADD MUSIC TO YOUR BASIC PROGRAMS

There are a number of programs in the market-place which turn your computer into a music keyboard, we stock one such example, namely COMPUT-A-ORGAN. MUSIC MAGIC is of the same genre, however its sophistication far exceeds previous attempts at creating music from the keyboard. This is not to imply it is difficult to use, far from it, with its teaching sections and sample note entry procedure it can probably be learnt in an hour by anyone regardless of programming experience.

MUSIC MAGIC can be used as a music composer, player and compiler for your computer. It allows you to enter notes into memory using standard notation and then create disk files of these songs. With the Music Magic editor you can then replay these songs at 9 different speeds and in three octaves with sharps and flats. To further your creative ability, these same songs can easily be edited, or adapted with repeating sections, vibrato effects or modified by altering the timing values between Whole Notes to Dotted Sixteenth and Rests.

As a teaching aid, MUSIC MAGIC has tremendous potential. Using your TRS-80 or SYSTEM 80 graphics set, it simulates a piano keyboard on the screen as the notes are being played. For the user with programming experience, MUSIC MAGIC allows you to save your songs as a Basic Language program. This powerful utility has an obvious implication if you are contemplating the writing of recreational or educational software. MUSIC MAGIC is supplied with a 10 page manual and a library of songs for experimentation purposes.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

45-2619

MARQUEE — A SIGNBOARD PROGRAM

The principle feature of MARQUEE is that there is a 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". To complement this feature it is possible to have a static message on the screen at the same time as the revolving one. Another advantage is that you may elect to have a 24 hours digital clock of hours and minutes and second displayed at the bottom of the screen. Incidentally, the characters for the clock and the Marquee message are about 25mm (1 inch) high.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2616

MORSE CODE — LET THE COMPUTER TEACH YOU

This is a nifty little program for teaching yourself Morse Code. The only additional equipment you require is a mini-amplifier to be connected to the cassette output of your computer. 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 of 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 code and you have to type the correct key. If you are incorrect the code will again be output until the correct entry is registered. In the keyboard mode you type a key, the character will be displayed on the screen (optionally) and the code output. The speed may be adjusted at any time so that as you get more proficient you can increase the pace.

Memory Requirement 16k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-2620

MORSE CODE TRANSLATOR — A SOFTWARE APPROACH

This is a fascinating program that will not only have an application for radio amateurs, but also for any shortwave listener curious to translate those funny dits and dahs. Input and output to the computer is through the cassette port, with the source either directly from radio or straight from tape. Essentially, the program is a morse code generator or decoder with input and output in English. Maximum speed in either mode is 28 word per minute and all morse shorthand is supported and correctly displayed. Other features included the ability to vary the speed of transmission of morse code either direct from the English input from the keyboard or by typing a screen of text before transferring the code to the transmitter. Various notes are contained in the documentation accompanying the program which enable the pitch of the output to be changed to suit the transmitter in use.

Memory Requirement 16k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-2641

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 QSO logging, history file access, file update and create, repeater timer, QRA locator and full QSY facilities. In use, the time and data 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 QSO to be worked is first signed on to the system. The program will then check that the computer has been given 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 QSO 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 QSO 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 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. A QRA locator facility is provided which, upon entering the QRA locator, will display the grid reference.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

11-2621

CALENDAR — AN HISTORICAL UTILITY

This is a useful little utility which displays a full monthly calendar for any month from January 1800 to December 2399. It is written in Basic and uses about 2.5k of memory. Either incorporate this utility into your own software or answer the riddle which troubles us all . . . on what day of the week were you born?

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2603

FAMILY TREE — TRACE YOUR ANCESTRAL ROOTS

This program caters for both the professional geneologist and the interested user who wishes to construct a "family tree". 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, this is to say, parent, grand-parents, great grand-parents, etc. to the limit 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:

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

A 16k TRS-80 or SYSTEM 80 should be able to hold 50 ancestor records, this will vary on the length of the names and comments. A 32k disk based machine should hold 100 records equally easily. A comprehensive manual is supplied with the program.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model I & 3
SYSTEM 80 Tape/Disk Mark I & II

Tape 40-2617
Disk 40-2618

ANIMATION — CREATE OUTSTANDING GRAPHICS

ANIMATION is a machine language program which enables you to easily create animation sequences on your TRS-80 or SYSTEM 80 computer. 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 screen can be shifted in any direction to assist in animating separate frames. 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. The sequence may either be stored on cassette as a System program or to disk. Thereafter, it may be loaded and accessed either by ANIMATION or by any Basic program. The commands for ANIMATION are as follows:

1. Dump the entire sequence to tape or disk
2. Load the sequence from tape or disk
3. Display a single frame or sequence at any point on the screen.
4. Frame set. Set the size of the frame required.
5. View the entire "movie" - i.e. run the entire sequence on the screen.
6. Clear the screen or the current frame.
7. Single step backwards or forward through the sequence.
8. Quit the program and go to Basic.
9. Clear the sequence and restart with a new one.
10. Enter graphics mode whereupon a new series of commands is available to enable the user to easily draw the pictures.
11. Kill the current frame.
12. Jump to another frame in the sequence.
13. Set the time period that the frame is to appear on the screen. (up to 100 seconds).

In addition to these commands, any frame can be set to reverse the graphics (black on white instead of white on black). During the construction of a sequence, all vital statistics are available for display on the screen. These consist of the number of frames that have been store, the current frame number, the current frame size and the memory size currently set from Basic. An added bonus with ANIMATION is that two other items of software are supplied 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. This program is supplied on either tape or disk and is accompanied by a comprehensive manual.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model I & 3
SYSTEM 80 Tape/Disk Mark I & II

Tape 11-2623
Disk 11-2625

SLOT MACHINE — PLAY THE POKIES AT HOME

If you like to play the One Armed Bandits, then this program is for you! All the old friends - cherry, bell, orange and so on. It pays off at 84% (or so it says) and obeys casino rules. Exceedingly realistic graphic treatment of the slot machine window. It looks exactly like 3 drums turning. The amount of the bet (it is a \$1.00 machine) the payoff for each go, how much you are ahead or behind and the % return are all continuously displayed. An interesting assumption is that if you have bet \$5.00, you are "ahead". Sounds familiar!

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2611



COMPUTER POOLS — INCLUDING FORM PREDICTION

Computer pools is a program written to help you predict the result of football matches for the football pools. Obviously, we cannot guarantee that this program will make you a fortune, however it will increase your chances and make the mundane task of filling in coupon more enjoyable. The important feature of this program is that it stores the performance of a team in its three previous 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. This enables the football enthusiast to incorporate his own bias 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 three Scottish divisions. 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 before the full predictions can be made. We see no reason why this program could not be adapted to forecast the results in the Australian Pools competition.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2605

HONEST JOE — RACING FROM THE OTHER SIDE OF THE FENCE

There are many program to do with horse-racing and betting on the "Gee-Gees". HONEST JOE seems to have pushed the State of Art still further, representing a very imaginative piece of programming. This program can be played between 1 - 4 players and either a single player or several players can play the part of the bookmakers. Each game is made up of four meetings held at different courses in England, and each meeting consists of 4 races of varying length. Each race has 10 horses of varying stamina competing in each race. A horse'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 with regard to each race. Three rather nice examples are:

- " A trainer was overheard in the Nag's Head at Doncaster to say the Whiz Kid would not be trying very hard . . . "
- " Over a few pints of beer 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".

All the racing occurs on the flat. Historical information is maintained about every horse, and the player is given the chance to lay his odds. 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 amount of cash bet follows after the race and the financial details on 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 the amount of money your customers will bet. Overall, we feel this game is a realistic simulation and good fun to play . . . even if you lose!

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2608

GAMBLERS GALLOP

PURCHASE ALL FOUR: HONEST JOE, HORACE, RACE, COMPUTER POOLS,
AND RECEIVE SLOT MACHINE FREE!



HORACE - A HORSE RACING GRADING METHOD

This program has been written to help you pick the winners. Obviously, it will never be the definitive answer to your betting blues, rather it has been written to assist you in 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. What HORACE does guarantee to provide is a reasoned assessment of form based on the one factor that most punter 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
When the horse last raced		

Once all this information has been input to the program, HORACE will project the first three past the post, together with some 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, and it should be borne in mind that the results are a measure of the horse's merit in relation to his companions in each particular race.

Memory Requirement 16k	11-2610
TRS-80 Tape Model 1 & 3	
SYSTEM 80 Tape Mark I & II	

RACE - A HORSE RACING GAME

This is a fascinating horse racing game featuring extremely good graphics. The horses racing up and how your screen have to be seen to be believed. The player is given the choice of racing over fences or on the flat. Up to six players can participate, with each player being allocated 100 dollars 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. 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.

Memory Requirement 16k	11-2637
TRS-80 Tape Model 1 & 3	
SYSTEM 80 Tape Mark I & II	

YI CHING — ANSWERS TO DAILY LIFE

YI-CHING is in function 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 seekers of knowledge may ask any question that he or she desires. In the Chinese traditional method, bamboo sticks are 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 representing a two or a three. Three coins are cast and the side which are uppermost are totalled. Although the bamboo sticks are traditional, there is no reason why the hexagram should be cast in different ways and particularly in this case by a computer. There are only four combinations of total possible, numbered from six to nine. The number six represents a moving YIN line, seven represents a moving YANG line. The YIN is a broken line whilst the YANG is the unbroken line. The program takes you through the Yi-Ching in a easily understood manner and it needs no experience or knowledge in order to follow it. The question is written in as 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 meaning of the answers have been deliberately chosen to be traditional and are entirely interpretative.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2613

TAROT — AN ACCOMPANIMENT TO YI CHING

This 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. This program has been used frequently to lay a reading for people who are not present or who wish an example reading. Part of the purpose of the program is to educate those who wish to learn the interpretation side of Tarot. A full course would require 30 or 40 megabytes, however the 16k provided would seem to be 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. Unlike the pure game versions of Tarot, no question is answered by the cards. The reason 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 the anxiety such programs cause) there are a number of subjects which the user should not be permitted to ask about. The issue of a person's health is a typical example.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2615

BIORHYTHM — PLOT YOUR DAILY LIFE CYCLES

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. 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 or not you support this hypothesis, it is still fascinating to check your "performance" on any given day, past or future.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2601

ASTROLOG — FOR ASTRONOMERS AND ASTROLOGERS

This program has been designed to carry out many of the rather complex and mundane calculations necessary to calculate the 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 simply to use, for instance, times are entered in hours, minutes and seconds, rather than as decimals. After the initiation date (the program is valid for the period Jan.1 1900 to Dec.31 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 the 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 one half, planets 10. Distance accuracy is to two decimal places, stated is the worst case, usually it will be better. It should be stressed that this is a full and serious program written by an experienced astronomer for practical purposes, not as a superficial insight into the subject.

Memory Requirement 16k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-2612

PROBE — PERSONALITY EXPLORATION BY COLOUR CHOICE

PROBE is based on the theory of colour choice as a determinate of personality. With the program are supplied eight colour cards. These are used to determine a person's specific preference, the answers are fed into the computer whereby certain characteristics of a person's personality are analysed and output, either to the screen or line printer. This is the general theory of the program. In actual use we admit to having achieved some rather surprising results, in that the output does seem to fit that of the operator. The program outputs a large quantity of information. The first is concerned with the amount of conflict present in the personality of the user. In total eight separate areas of conflict are examined. Next an anxiety rating is forecast on a scale of 0-12, representing calm to anxious. Finally, a colour decode is carried out. The computer, in fact, accesses about 50k 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 influences 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. As is the case with programs of this nature, we must make the general disclaimer that we cannot guarantee the results! Due to the large amounts of data which is accessed by the program, PROBE is supplied on disk and is not available on tape.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

11-2643

HOROLOG — A FULL HOROSCOPE PROGRAM

HOROLOG has been written for the layman who wishes to cast a horoscope. It will calculate a horoscope for any person with a birthday from Jan 1 1900 to Dec. 31 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 minute, Moon 3 minutes, Planets to Jupiter 15 minutes, other Planets except Pluto 20 minutes, Pluto 1 degree, ASC, Node, MH 1 minute, PF 2 minutes.

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. The second part of the program, 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. Nonetheless, the interpretation section of HOROLOG can produce some fascinating results. For the curious, or mathematically inclined, the distinct interpretations it can generate are more than a thousand times the present world population.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2614



SPECIAL OFFER

PURCHASE ANY FOUR OF THE FOLLOWING:
ASTROLOG, PROBE, HOROLOG, YI-CHING, TAROT, BIORHYTHM
AND TAKE \$15.00 OFF THE TOTAL PURCHASE PRICE

HOME & PERSONAL

PLANT SELECTOR

A SERIOUS PROGRAMME FOR THE HORTICULTURALIST

PLANT SELECTOR is an important program, particularly because, as far as we know, it is the first of its kind for the TRS-80 and SYSTEM 80 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 in that 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. Especially as the objective of the program is to select a plant, once certain parameters have been allocated. 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 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, all have been verified using "The Royal Horticulture Society's Dictionary of Gardening", and where appropriate the "Eighth Edition of Bean's Trees and Shrubs". 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 our users throughout Australasia 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 this context of the program hardy means the little or no damage occurs during the average winter.

Deciduous or Evergreen

Some evergreens are placed in both files.

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

Fastigate/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 this 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.

Memory Requirement 48k
TRS-80 Model Disk 1 & 3
SYSTEM 80 Disk Mark I & II

11-2646

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 profession, 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 ten minutes on the Model I and III machines. On the Model II this is cut to five 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 and 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 TRS-80 owners who are also radio amateurs, electronic hobbyists or professionals, circuit design power previously only possible using mainframe computers.

Memory Requirement 32K/DB
TRS 80 DISK Model 1 & 3
SYSTEM 80 DISK Mark 1 & II
TRS 80 MODEL II/16

IMAGE PROCESSING KIT - HIGH QUALITY REPRODUCTION

This program is somewhat different to our normal programs and perhaps we should get the differences out of the way to begin with. 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 though ANY printer - dot or not - can be used) 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-graphic orientated printer is reasonable. As can 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 the sense that buying it will 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. Image Processing Kit gives you the opportunity to conduct experiments in image processing without buying 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 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 the resolution is not so good, so a printer is pretty well mandatory. The kit contains a machine code program to drive the MX-80 Printer 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.

Memory Requirement 32K/DB
TRS 80 DISK Model 1
SYSTEM 80 DISK Mark 1 & II

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.

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.

SUPERKEY – DRAWING AID

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.

EXEC

Is a COMMAND LIST PROCESSOR and Alternate Screen which give new dimensions in the way you can program and control the running of other software. It executes programs (called CLISTS) consisting of mixtures of COMMANDS,BASIC Statements and CONTROLS.

Intended uses are : 1) General File Management - with repetitive DOS operations being encapsulated and stored as programs.

2) Test case execution - Time-consuming and tedious program testing can be largely automated.

3) Timings and Benchmarks - automatic performance testing

4) Shop window Demo's with repeated comments,explanations and sales information.

5) Tutorials showing how software can be used and Run.

Essentially EXEC is a J(ob) C(ontrol) (L)anguage for the more primitive DOS's like TRSDOS and NEWDOS which are not provided with such a facility.

Obviously this is a very specialised application program but for authours of serious software CLISTS can do a lot of selling and save a lot of after sales service calls. It has application also to the serious Hacker but the average user will not need a Utility of this quality.

FILE COMMANDER

The second of the new SOUTHERN SOFTWARE offering is of much wider application and with LAZYWRITER and DISK INDEX 3.1, has become one of the base programs that MOLYMERX relies on for our day to day operations.

FILE COMMANDER allows full screen display of Disk Files so that commands can be executed with 1 or 2 keystrokes.All DOS's are supported with shorthand commands,repeated operations and own-defintions allowed.

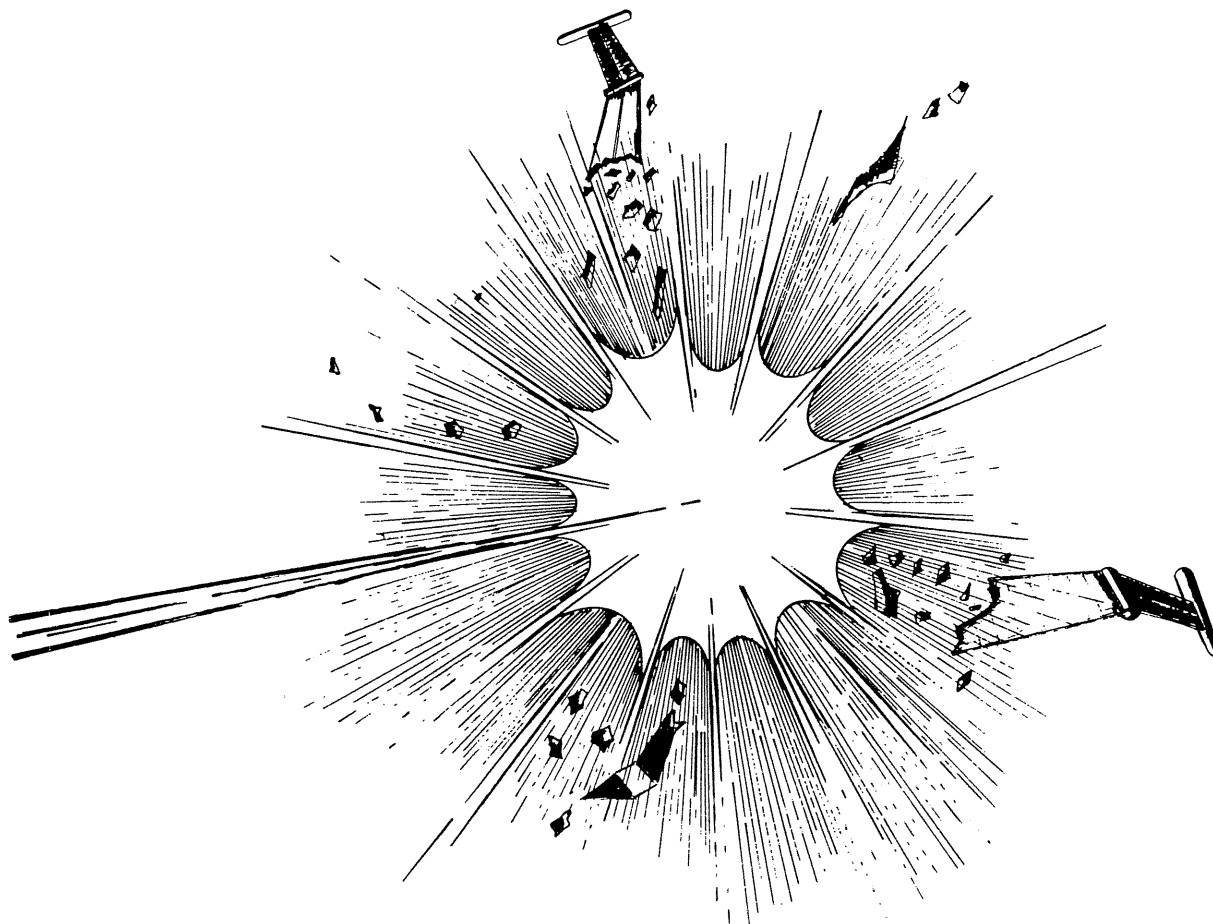
As with other Southern Software,(like ENBASE and ACCEL) the programs are supplied on a minidos disk with utilities to RELOCate and IMPORT to any disk system and single drive copies are supported.

FC provides a very useful series of utilities for DOS operations. Again with a DOS such as DOSPLUS 3.5 the utility is provided (CO-DIR) but for TRSDOS or NEWDOS users it is a very valuable product.

Memory Requirements 32K

Mod.1/3 - Disk

Sys 80 - Disk



ARCADE GAMES

INVADERS FROM SPACE - A REVAMP OF AN OLD FAVOURITE

The INVADERS program hardly needs an introduction, it has become synonymous with the word "Arcade". Our version is different in that it offers everything that the classic Invaders left out. The Aliens drop bombs, move around and try to overrun your bases. To combat this onslaught you are equipped with a laser gun and have the ability to move your base and simultaneously fire at marauding the Aliens. An additional feature is that almost all of the game parameters can be chosen at the start of the game. In other words, you can control how fast the game runs, how many bases are to be provided, how many shots in the air at one time and so forth. As seasoned players will be aware, the object of the game is to destroy the Aliens before they destroy you! The program is written in machine language for fast action. Sound is supported.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

40-2114

SPACE FIGHTER - FAST ACTION FOR THE COLOR COMPUTER

SPACE FIGHTER is a well known program which has been around in various guises 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 your aim is true, then your enemy is destroyed. Not surprisingly, this demands a certain amount of skill in zero gravity conditions. Provision for joysticks and sound are included.

Memory Requirement 16k Extended Color Basic
TRS-80 Color Computer Tape 11-2136

STAR FIRE — 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. The players fight it would across the far reaches of space, not only against each other, but also against the clock. The player 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.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2107

SUPRA TREK — REAL TIME TREK

There have been a number of versions of Star Trek on the market, this version could be described as being light years ahead, not only does it offer excellent graphics but a new dimension - time. Each game lasts 15 minutes and you have to get all the Klingons in that time. It also combines some 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! To aggravate the situation you are constantly fighting against time - there is a continuous time display. Compounding this situation is a gradual depletion of your fuel supply and the occasional loss of a crew member. 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 are actually stationed on the bridge of the Enterprise with your control panel in front of you. Through this you look out into space and navigate and or defend your ship. The emphasis in this game is more on action - rather than on intellectualising moves. You require a minimum of 32k memory and Level II Basic to play Supra-Trek

Memory Requirement 32k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-2138

ASTEROIDS — A FUN ARCADE GAME

ASTEROIDS, like INVADERS, stemmed originally from the arcades. For those not familiar with the game, the idea is that you take the place of a space ship which encounters a shower of Asteroids. You have to dodge them and annihilate them with your 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 dangerous to your craft. When an asteroid hits you your craft is destroyed and one life is taken from your score. This particular version has a number of enhancements. You can rotate the ship around its axis and fire in different directions, you can supply thrust to your ship, and if the going gets rough, then you can enter hyperspace. To keep your fingers active, from time to time you encounter fast moving alien ships. These crafts are undoubtedly ruthless, they fire off rays in all directions, and if they hit your ship you loose a life. A major plus feature of this game 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. Written in machine code, ASTEROIDS is fast and highly enjoyable.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

Tape 11-2101
Disk 11-2108

BREAKAWAY — MULTIPLE LEVELS ON THE 80C

Every computer has some form of BREAKAWAY available. Ours is all machine language, fast, smooth and carries 15 levels of difficulty.

Memory Requirement 16k
TRS-80 Color Computer

Tape 41-2128

VENTURER — HIGH SPEED GAME FOR THE 80C

A fast all machine code Arcade game that feels like an Adventure. Go berserk as you sneak past the Dreaded Hall of monsters to gather treasure in room after room, killing the nasties as you go. Great colour, high resolution graphics, sound and joysticks included.

Memory Requirement 16k
TRS-80 Color Computer

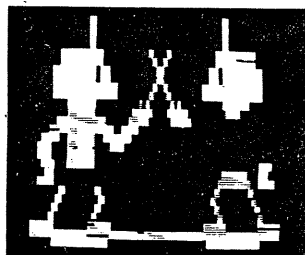
Tape 41-2122

DUEL-N-DROIDS — TERRIFIC FUN

If you are familiar with "Android Nim" and Tandy's "Dancing Demon", then combine the two and you have something close to DUEL-N-DROIDS. Once again Leo Christopherson has excelled himself to produce a game of very high calibre. 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 his android 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 this his android will beat the computer when he 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 is pitted against androids controlled by the computer in random ranking. Excellent sound is provided in the program.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

40-2111



SPACE EYE — PLAY THE PART OF A BADDIE!

You play the part of a Vagon space commander and your mission is to destroy Earth, the Moon, Mars or Jupiter, before the surface defences shoot you down. However, this is not just another shooting game. During the progress of play the centre of the screen is taken up by a very realistic view of the planet underneath. Obviously, the topography of Earth will be better known to us than that of the other planets. Regardless of whichever planet you are orbiting, the impression given is quite uncanny and really has to be seen to be appreciated. In fact, the graphics for the various planets are so extensive that the data for each planet is fed into memory from either tape or disk. Although the shooting back and forth is good fun, the value of the program is in the outstanding display of graphics. An added feature of this program is the commentary of the main geographical features as you orbit each planet, these can come in handy as very few of us have already orbited either Mars or Jupiter!

Memory Requirement 16/32k
TRS-80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

Tape 11-2105
Disk 11-2106

SEAWOLF — FOR UNDERWATER ARCADES

If you are tired of battling it out in outer space against marauding alien ships, then this game offers something of a difference. The idea of this game is that you control a submarine which can be moved in any direction, including diagonally with the arrow keys. Of paramount importance is to avoid all the dangers that lurk in the deep. You have to contend with depth charges and a liberal sprinkling of mines. If that is not enough, then the seabed has mountainous terrain which is continuously changing and must be avoided at all costs. The submarine carries an armament of torpedoes which can be fired either vertically or horizontally, these can be used at your discretion. For the seasoned campaigner there are five skill levels, affecting the speed of the submarine and also the number of depth charges dropped by the search vessels. Sound, of course, is included, however it is only fair to say that this is not one of the prime features of the game.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2135

SERPENT — AN UNDERWATER GAME

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 a submarine which can fire torpedoes with which he must hit large sea serpents that wriggle around the screen. The main objective is to achieve a "clean kill", otherwise the serpent may divide doubling your problems. If you collide with a serpent you sustain damage, five such collisions destroy the submarine. You must also avoid colliding with the whales, these mammals are extremely large and have the capacity to destroy your ship completely. Like many of our other arcade games, certain parameters can be preset. There are five preset speeds, as well as the option to go on a special mission in which the following parameters can be set: game speed, submarine speed, torpedo speed, number of torpedoes in the salvo and the serpent's speed. All in all, a lot of fun and a refreshing change from zapping space ships. Written in machine code.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2104

DEFEND

— THE HIGHLY ACCLAIMED ACTION GAME

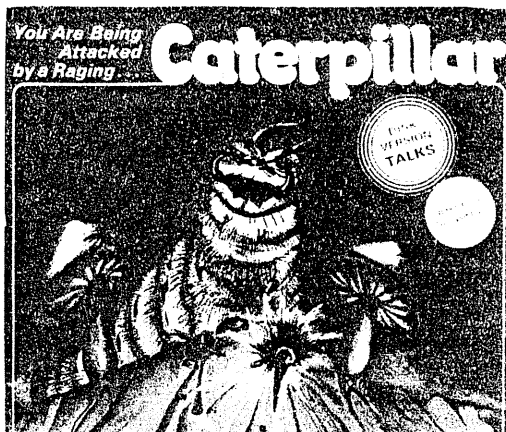
INVADERS as you have probably already discovered is a great deal of fun, but it is only played on one plane - vertical. ASTEROIDS is more "three dimensional", but it is concerned with inanimate objects, namely lumps of space rock. With DEFEND you actually feel as if you are piloting the craft. The result is a game with a high addictive content. Your objective is to shoot down a squadron of aggressive enemy ships. If you are skilful or lucky enough to obliterate them all, you have to navigate through a shower of meteorites. If you get through that then you must navigate a tunnel before you are in the clear. You then automatically return to the beginning and begin another orbit, albeit at a somewhat harder level.

The game is played on a horizontal plane, but one of the great features of the game is that you can control your ship in all directions through a single plane. In other words, you can not only go up and down and sideways, but also diagonally. In the highest of the three levels of play the control of the ship is very crisp and fast, the sound effects are good, and with the disk version the five highest scores can be saved.

In addition to your main armament of laser cannon you also have a limited number of Smart Bombs. These cause all of the alien ships to lose their cannon power. To warn you of impending danger there is a radar screen provided on the top right of your screen, this represents the space which is being approached. As well as three levels of play, there are various game parameters. For instance, a different number of aliens will appear with each level, and as each circuit of the course is completed five ships are added to a maximum of 60 - at this level the action becomes extremely fierce . . ! The disk and cassette versions are essentially the same, although the former does save scores to disk. SYSTEM 80 owners should note that it is only compatible with their machines if the clear and arrow keys have been added.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

Tape 11-2102
Disk 11-2103



CATERPILLAR

You are being attacked by a raging caterpillar. As he creeps down the valley, you must destroy it or be destroyed. If you escape from the first you will have only survived to fight another. Beware of the trained killer moths and tumblebugs.

Memory Requirement 16/32k	Tape	42-2122
TRS-80 Tape/Disk Model 1 & 3	Disk	42-2120
SYSTEM 80 Tape/Disk Mark I & II		

SKY SWEEP

You are flying above an ever changing terrain. Missile after missile is launched at you from below, while you battle oncoming gun fire, only to enter an ominous cave where danger is tripled. Only a high level of skill will guide you through this game.

Memory Requirement 16k	42-2127
TRS-80 Tape Model 1 & 3	
SYSTEM 80 Tape Mark I & II	

FORTRESS

A super-fast paced arcade game. Defend your fortress from alien fighters, but watch out for the sneak attack. The game starts out slowly but speeds up quickly.

Memory Requirement 16k	42-2124
TRS-80 Tape Model 1 & 3	
SYSTEM 80 Tape Mark I & II	

ALIEN DEFENSE

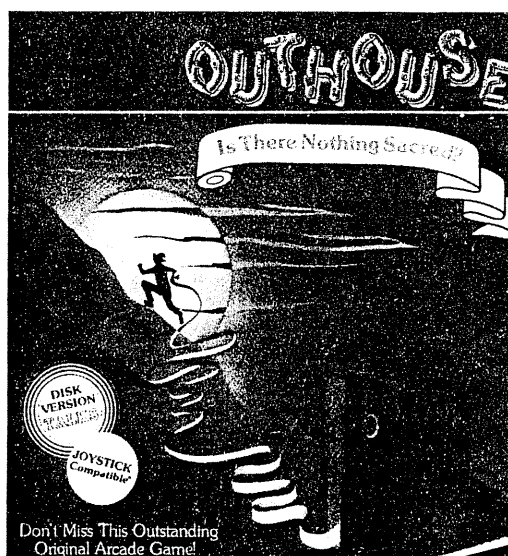
Piloting your ship across the horizontally moving terrain, you must battle the various enemy spacecraft. You are under attack almost constantly from missiles and bombs, to make matters worse, your ground patrol people are being picked up by the alien landers. To save them you must shoot the landers and swoop down to "catch" the falling man. This fast action game requires skill and rapid reflexes. The Model 3 version makes excellent use of the that model's special graphic features and both the Model 1 and Model 3 disk versions TALK.

Memory Requirement 16/32k	Tape	42-2126
TRS-80 Tape/Disk Model 1 & 3	Disk	42-2125
SYSTEM 80 Tape/Disk Mark I & II		

OUTHOUSE

Is there no place sacred? Even the outhouse has been invaded. Ward off intruders who creep up to the outhouse to snatch the paper supply. At the same time you must defend yourself from their firing ships in the sky. Be very careful, when your paper supply is gone . . . so are you! With sound and the disk version talks.

Memory Requirement 16/32k	Tape	42-2123
TRS-80 Tape/Disk Model 1 & 3	Disk	42-2119
SYSTEM 80 Tape/Disk Mark I & II		

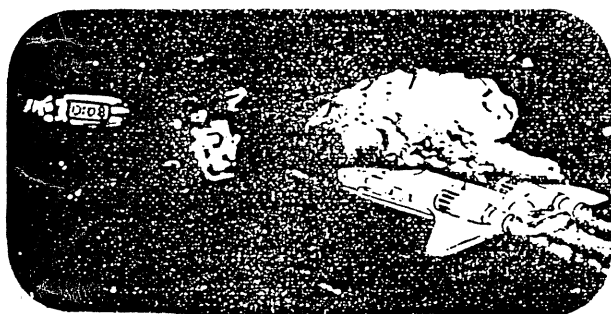


SPACE ROCKS - COMBAT ASTEROIDS IN OUTER SPACE

There are two objectives within this game. Firstly to break up asteroids before they break you up, and 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 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 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 rocks per screen. SPACE ROCKS also 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 more use in providing an opportunity for practicing control of your space ship rather than meaning to be a serious game.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

40-2143



FROGGO - HOP OUT OF DANGER

FROGGO is an arcade game whereby the user, as a frog endeavours to cross a street, then a river and then finally find its way into its own hole. It is all very good fun and represents a true test of coordination. 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. Surprisingly, 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! We won't tell you any more, simply to say that it is not easy and indeed, gets progressively harder as one goes on. The scoring of the game is described in the package, it supports sound and as you have probably gathered remains a game that requires a high level of skill.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2141

SHEEPDOG - A MACHINE LANGUAGE VERSION OF AN OLD FAVOURITE

There have been a number of versions of this popular game whereby the player controls a dog which is supposed to herd sheep into a pen. Where this game differs is that it has been written in machine language. The final result is both challenging and fun to play. Within the game there is the option 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 he wishes to change the parameters.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2144

FRENZY - AND IT REALLY IS!

This is an excellent arcade game from Bill Mansell who wrote SEAWOLF, already featured in the catalogue. Stated succinctly, there appears on the screen five levels of scaffolding, each connected by ladders. On each level of scaffolding there are a number of bricks that have to be collected by the player who is in control of a little figure dashing around the scaffolding. This would be relatively simple but for the fact that the player must also contend with a number of monsters, contact with which is fatal. 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 monster, 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 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 when a monster reaches a ladder he may or may not use it. Just as SEAWOLF made a pleasant change from space arcade games, FRENZY is equally unique. The title of this game is particular well chosen as the player has to be very fast on his feet to do well. Sound is of course supported, and the only question is whether it is the player or the monsters that achieve the frenzied condition first.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2139

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 are 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, you are automatically taken on to the next one. The first sector is different to the others with 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, as each sector has a more powerful alien fleet in it. You start 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 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.

Memory Requirement 16K
TRS 80 Tape Model 1 & 3
SYSTEM 80 Tape Mark 1 & II

DUEL - AT HIGH NOON?

This is strictly a graphics game. 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 the computer takes the part of the other. The graphics are very good. One of the great difficulties of animating graphics for the TRS-80/Genie is achieving 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, the motion is more life-like and secondly it gives a slight three dimensional affect. The motion of gunfighter one, (the one controlled by the player if he is playing the computer) is with four keys. 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 gunfighter 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. This unashamedly graphic orientated fun game has good sound

Memory Requirement 16K
TRS 80 Tape Model 1 & 3
SYSTEM 80 Tape Mark 1 & II

ENGINE DRIVER - MORE FUN THAN WITH NZR

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 real 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. This game is played on the screen on which is displayed various railway tracks and four stations. Going round the tracks are five trains. 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 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. 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 (particularly the title one). 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 is the winner. As with all our programs this one has been test played by a number of people (this sort of "work" is why I'm in this). Engine Driver comes with sound.

Memory Requirement 16K
TRS 80 Tape Model 1 & 3
SYSTEM 80 Tape Mark 1 & II

INTERDICTOR PILOT — THE ULTIMATE SPACE GAME

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:

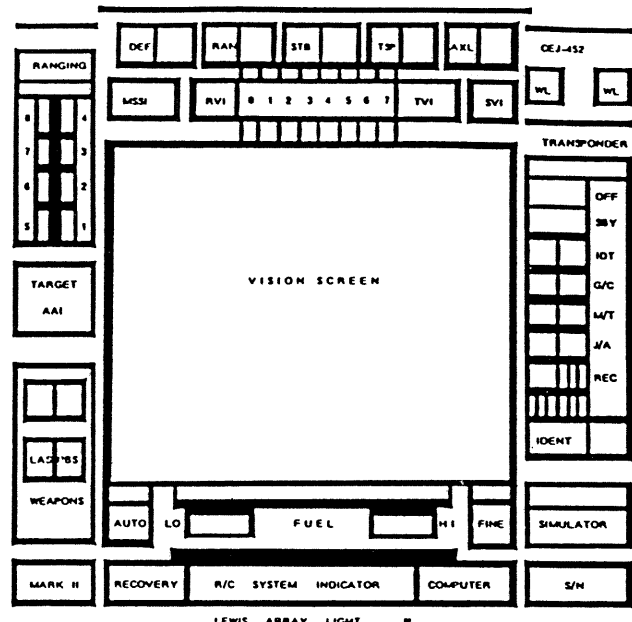
It is now 5 years since 11 battlestations of the Jahdra-Gallan Alliance first appeared in Federation airspace, thus violating the terms and conditions of the Limhof Concord. Early diplomatic efforts on the part of the Federation to avoid open confrontation were frustrated when the 9 members of our Representatives 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.



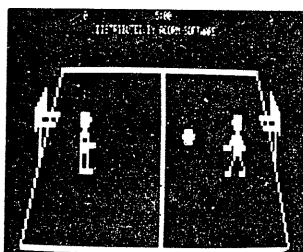
SIMULATION GAMES

BASKETBALL — A REALISTIC SIMULATION OF "ONE ON ONE"

This simulation has a high level of graphics, it is written in machine language and is supported with sound. Each game lasts 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. The appeal of the game is its realism. The court player may be controlled in one of four directions, he may steal the ball, duck around his opponent, dribble the ball, go in for a lay-up. Regrettably hook-shots are not supported, apologies to all aspiring Kareem Abul-Jabbars. True to life, the player who scores the most baskets in four minutes wins the game.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

40-2213



DARTS — AN ENJOYABLE SIMULATION

You are probably wondering how the author of this program has managed to draw a circle on the screen, a virtually impossible task if you are using a standard TRS-80 or SYSTEM 80. The author has managed to get around this problem by displaying only part of the board at a time. Surprisingly, this does not really detract from the actual playing of the game, for if you visualise yourself playing darts you are normally aiming at one particular number or those adjacent. The authors has been extremely clever in incorporating into the game a certain amount of skill in the actual throwing of the dart. I promised not to go into the details of the techniques used, merely to say that the results are a superb simulation of the game of darts on a TRS-80 computer.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

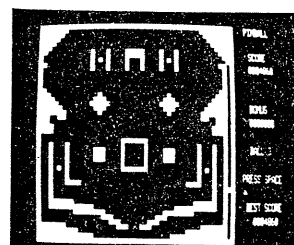
11-2210

PINBALL — COMPLETE WITH FLIPPERS

This is an extremely good graphic representation of a normal pinball machine in so far as it can be presented 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 299,999 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 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, with flippers, the infamous 'Bermuda Square', bumpers, speed balls etc. all with varying quantities of points. All in all, this is an extremely lifelike simulation which really has to be played to be appreciated.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

40-2216

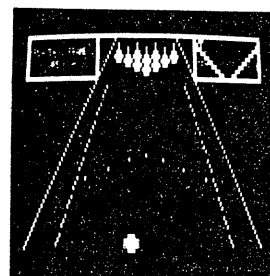


TENPIN — TENPIN BOWLING ON THE COMPUTER

This is another program from John Allen of PINBALL and ASTROBALL fame. Like his other games there is an emphasis on graphics, in fact this program stands as a very good simulation of Tenpin Bowling. The program is written in machine language for speed. When you start the game the ball comes up the right-hand gully of the lane, the ball is taken across the lane with either one or two arrows keys and thrown with the space bar. The speed of the ball can be controlled by the length of time the space bar is held down, there is even the facility to place spin on the ball. Like John Allen's other games, TENPIN follows the real life game very closely. With plenty of practice there is no reason why you should not achieve the occasional "Strike" and have lots of fun in the process.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

40-2212



GOLF — A GOOD GRAPHIC SIMULATION OF THE GAME

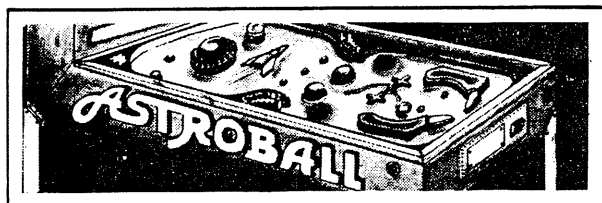
This is a disk orientated program written in Basic with a machine language subroutine. It follows the real game quite closely. As supplied it has 17 holes, with provision to construct different or additional holes as required. Each hole is played on a map of the course with symbols indicating the features associated with each hole. Up to four players may take part at the same time. Strokes are made by indicating the club and the angle of the stroke required. Eleven clubs are provided, divided into woods, six irons and three wedges. Course terrain and weather information is continually available. Provision is made for penalty strokes, wind consideration and the inevitable water hole. Each hole is selected randomly by the computer, you may only play each hole once in a round. We found this to be an enjoyable game requiring a high component of skill. Overall, we felt that the author of GOLF has been successful in balancing the inevitable restrictions of a computer game with the live enjoyment of an actual game of golf.

Memory Requirement 32k 11-2203
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

ASTROBALL — AN OFFSPRING OF PINBALL

There are close similarities between Astroball and Pinball. However, we feel that John Allen the author of both games seems to have bettered himself in this simulation. The major difference is that there are a lot more moving targets in ASTROBALL. There are now five skill levels together with space ships that move across your screen for extra bonus points, and for the faint of heart there is a black hole into which you can quietly disappear. Sound is of course available.

Memory Requirement 16k 40-2215
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II



RACING DRIVER — THRILLS AND SPILLS WITH THE 80C

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 from a helicopter looking down at the track, and some from the drivers position. This program is similar to DRIVER for the Models 1 & 3 in that, whilst driving, you are able to see the road ahead or 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 Color Computer. To drive the car you either use the Tandy Joysticks or two keys, sound is included throughout the program 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.

Memory Requirement 16k Tape 11-2207
TRS-80 Color Computer Extended Basic

DRIVER — FAST ACTION BEHIND THE WHEEL

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 version 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 corner 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.

Memory Requirement 16k 11-2201
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

SHUTTLE II—A COMPUTER MODEL OF THE COLUMBIA FLIGHT

This program is a simulation of the 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!

An important feature of this program is that it can be started at any of three points. Either at countdown, while the Shuttle is in stable orbit around Earth, or shortly before landing enabling you to clock up your practice hours before the maiden flight. Your objective is to guide the Shuttle, and to do this you are provided with a number of different controls. The thrust of the ship can be varied on a scale of 0-9, the craft may be rotated vertically in either large or small increments, there are controls for jettisoning your fuel tanks and controlling your undercarriage. To achieve a stable orbit you must be able to control you height, horizontal speed and vertical speed. Skilful use of the orbiter motor in conjunction with the altitude controls will achieve this result. One remarkable feature of this simulation is that it includes a full atmosphere with a density that closely follows that of the real atmosphere. As the density steadily and rapidly increased below about 55,000 yards, the craft begins to experience both life 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 it 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 apply, incidentally, apply throughout the flight. The secret is to loose 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.

The emphasis in this program is in presenting as realistic as simulation as possible. It combines the control of a space vehicle with that of an aircraft and gives the user the best of both worlds. It is not a graphic simulation. The joy remains in controlling the orbit and landing the craft successfully, rather than presenting a graphic representation of an orbiting Shuttle.

Memory Requirement 16/32k Tape 11-2208
TRS-80 Tape/Disk Model 1 & 3 Disk 11-2202
SYSTEM 80 Tape/Disk Mark I & II

ASTRO NAVIGATOR — MORE THAN A SPACE GAME

To label this program as a game is to underplay the incredible realism of what can best be described as a simulation. The software programs your TRS-80 or SYSTEM 80 to produce a complete and highly accurate simulation of the solar system. All the orbits of the various planets are correctly calculated, as are their orbital speeds and gravitational pulls. Each time the game is played the planets and stars in 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.

The purpose of the game is to blast off from the planet of your choice and travel throughout the solar system. 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. Believe us when we state that it really is a thrill. Part of the reason is that the game is unbelievably difficult because all the physical laws and relationships are obeyed. Although the player of this game has the help of a computer, it will only tell him the statistics of the journey. It remains for the player to decide how much fuel to take on, what thrust to use, whether to try to blast off slowly, or whether to launch at a somewhat higher velocity. Apart from the flight data, there are maps of the other planets, of the inner planets and a close up view of a planet when the craft reaches a specific proximity. Superimposed on these maps is the position of the spaceship together with the last few positions that have been occupied. At all times, gravitational pull, the laws of momentum and various other considerations are acting on the crafts course. We should add that graphics are only a subsidiary part of the simulation, yet this program remains tremendously engrossing, attributable we feel to the high level of skill required to master ASTRO NAVIGATOR.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2209

LUNAR LANDER — A DIFFERENT LANDING

This real time Lunar Lander executes its descent with only one variable, the amount of thrust which may be varied in a range from 0 - 9. It is therefore a very easy and enjoyable program to use. Graphics are used extensively together with a continually changing display of Height, Time and Fuel Remaining. An added feature is the ability to command a demonstration, thus proving that a non-fatal landing can be achieved! The graphics show the Lander coming down at altitude display. The speed of its descent (or ascent if you over-react) is relative to thrust entered. A further graphic display is of the Lunar landscape, which is different for each game. During the last 500 feet, the altitude display is magnified, which greatly enhances the enjoyment of the game.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2205

LOST COLONY — MANAGE A NEWLY COLONISED PLANET IN DEEP SPACE

LOST COLONY is a resource management simulation. The scene is "Warrens World", the world's first attempt at colonising a planet in deep space. The next support ship isn't due for about 15 years, and . . . well, let's just say that things are not going too smoothly. An election was held for an economic manager to straighten things out, and guess who won!

While there are traces of Colonialism, it remain a democratic simulation in that you will be turned out of office if the workers under your control become dissatisfied with your administration. In order to bring the game within some reasonable limits, all economic activity is condensed into five broad industries: agriculture, minerals, energy manufacturing, and transportation, while worker satisfaction remains tied to their standard of living. To assist with your administration, you are provided with a number of maps and charts as a guideline to distributing the economy's resources. Throughout the simulation you must assign human and robotic labour forces, explore new land, and allocate production quotas. At the same time you must determine equitable pay scales and taxes that will both optimise productivity and keep the populace happy (or at least quiet and hardworking).

Communication is handled between you and the computer using sentences like, "ASSIGN 1200 SEMI LITERATE MEN TO FARMING", or commands as short as "1200 FARM". LOST COLONY is a challenging simulation, not only as a recreational program but as an insight into Public Policy for students of Government, Economics and Citizenship.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

Tape 40-2211
Disk 40-2214





JUMBO

JUMBO - A TRUE FLYING SIMULATION.

Without a doubt JUMBO is the best flying simulation that we have ever seen. Indeed, it is so good that we made 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 an 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 get the user tied to his keyboard into all hours of the night, JUMBO has this.

There have been one or two flying simulations 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 the 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 they 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 the aircraft is a 747. Such graphics, however good they are, 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 conjointly, one of the authors is a professional pilot and the other is a very good programmer. The former has instilled into the program such a 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 the trip. You have to start the engines, choose your route and course, take off, climb to an 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: Perth, Canberra, Adelaide, Sydney, Auckland, Wellington, Melbourne, and Darwin. We have already emphasised the authenticity of this software, and of course it takes some 7 to 8 hours to fly from Perth to Auckland. Accordingly, the authors have 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 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 parts. 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 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 aircraft, the flap retraction rates, climb and cruise speeds, and descent distances.

While what has been said above is of the greatest importance, what is really 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 SYSTEM 80. 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 the above, the programming half of the authorship consortium has somehow managed to squeeze into 16k maps of Australia and New Zealand with the Tasman Sea in between. If you are flying towards the vicinity of Auckland it is even possible to pinpoint Fiji and Raratonga on the screen. 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 destination 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 15 or more kilometres out, the aircraft flies the beam exactly, he will finish up on the runway.

We keep on mentioning the realism of this program, which is in our opinion 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 approached the stalling speed, this figure starts to flash to draw attention to it. When one gets to the actual stall, which we hope you never do, a very large indication appears 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 or not you have ever piloted an aircraft, you will be captivated by JUMBO.

Memory Requirement 16/32k	Tape 11-2204
TRS-80 Tape/Disk Model 1 & 3	Disk 11-2206
SYSTEM 80 Tape/Disk Mark I & II	

UNDERWORLD - BE A BADDIE FOR A CHANGE

Underworld is a board game. It is neither an arcade game 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 shortcut 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 crooks exchequer is increased by either 40 or 20 thousand dollars each time the player passes the Start position. Underworld is played by 2 to 4 players. Progress round the boards is by way of a random number generator, similar to throwing a pair of dice. 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 a nice change to have a game for more than one person.

Memory Requirement 16K
TRS 80 Tape Model 1 & 3
SYSTEM 80 Tape Mark 1 & II

CASINO ROULETTE - TO FRENCH RULES

Everybody know 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 that we know of, and it is really a natural for the machine. The appeal of this version is the strictness with which it compiles to the actual game. 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 sure whether this is all that is available in actual life or not but 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 four 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. 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 this 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.

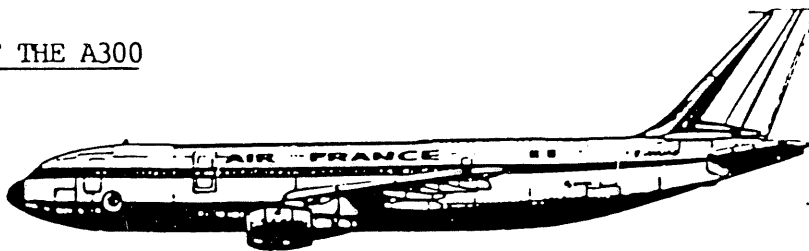
Memory Requirement 16K
TRS 80 Tape Model 1 & 3
SYSTEM 80 Tape Mark 1 & II

MAH JONG - THE UNIQUE CHINESE GAME

Mah Jong is a Chinese game played with ivory and bamboo (or nowadays plastic) tiles. These are arranged into walls from which the players deal themselves a certain number. To somebody who has never come across the game a description of Mah Jong is to the effect that it is Rummy played with tiles. To the avid Mah-Jong player this would be sacrilegious but it does contain 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. There are many versions of Mah-Jong but in the most common there are five different sets of tiles of general interest. The most important sets are Circles, Characters and Bamboos plus, Winds and Dragons. Two other sets, Flowers and Seasons, are of little interest until the end of the game when the scoring takes place. In order to win the game one has to declare Mah-jong. It is played on a "table" divided by lines to make the various hands more understandable. There is a maximum of four hands available in Mah-Jong. In this version, the computer plays one hand

Memory Requirement 16K
TRS 80 Tape Model 1 & 3
SYSTEM 80 Tape Mark 1 & II

AIRBUS - A SIMULATION OF THE A300



We wish it to be clearly understood that the simulations that we publish have one thing in common; 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 microcomputer. 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. Large aircraft, and space vehicles are flown on instruments not with reference to the outside world and in this family of simulations the majority of memory is devoted to instrument flying rather than graphic displays.

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. The present A300 in use stems from a modified A300 B design proposed two years later in 1968 and 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 and 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 payload of 30,000 kg., of 1500 nm. The A300 is 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; 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 by dead reckoning or by simply following a compass bearing. Thus the intrepid new pilots who purchase JUMBO (which was the first 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 most small aircraft, 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. 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. 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 documentation. If one puts these two factors together, the fact that radio navigation is included and the program has been written in 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. We should make it abundantly clear that as a two engine aircraft, AIRBUS is inherently easier to fly than JUMBO and if you wish to go up for a Sunday afternoon jaunt without worrying 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 \$2.00, will be supplied with the educational manual. Otherwise the normal flying manual will be supplied on its own.

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 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 and the nose wheel direction control. In each case the step size is 1/5th of the normal. 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 by the inclusion of a number of features. For instance the three speeds V.1, VR and V.2 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 this extent 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 guidable and if you run the aircraft off the runway you 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 and 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 it. This is 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. One also has to work quite hard at stalling AIRBUS. 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.

As AIRBUS is a compiled Basic program its DOS compatibility will depend on that DOS's compatability 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, such patches and such DOS's will have to be used. AIRBUS is a disk program only.

In summary, 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, but they will have to take a little time to grasp the intricacies of radio navigation.

Memory Requirement 32K
 TRS 80 Model 1 & 3 (See comments above re Mod.3 DOS)
 SYSTEM 80 Mark I & II
 DISK ONLY



THE INSIDE TRACK

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 performance 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 Member's Stand provides betting windows from \$10 to a "million dollar" window and deposit and bet sequences are straightforward 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 account 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!!!

TECHNICAL DESCRIPTION:

16K (TAPE) version— program length 13288 bytes
150 horses, 60 riders

32K (DISK) version— program length 26723 bytes
750 horses, 150 riders

The Inside Track is written in Microsoft LEVEL II BASIC with imbedded machine-language graphics and race logic, and random access horse and rider files.

The M/L routines are situated in a rigidly formatted BASIC line structure, and use no ROM calls. A self-erasing locator module provides proper location to suit the start-of-BASIC address, and the graphics RAM is also located within the program structure.

Horse and rider file records are contained in BASIC lines, and use a special form of compression which effectively halve the memory space normally required.

The program is not BREAK protected, and may be stopped and re-started without strife but the code is self-modifying and should not be saved after it has run.

It's up to you now . Good luck and we'll see you at Millionaire's Window'

Memory Requirement 16/32K
TRS 80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

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 of 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.

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 microcomputer. 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.

CHRISTMAS

LISTING

Firstly, check our hardware prices on the back of the TABLE OF CONTENTS page. This is a draft of an advertisement you will be seeing in BITS & BYTES and COMPUTER SCENE shortly. Hardware sales are a new venture for MOLYMERX but I can be confident that you won't find a better price deal.

The MOLYMERX Christmas software listing contains some very interesting and powerful Machine code programming utilities.

S.B.E. (S(imple) B(ut) E(ffective), believe it or not) is a development system allowing Z-80 programmers an upward path to the enticing fields of 8088 and 80186, 80286 code (as well of course, producing Z-80 Code).

It is the programming language used to write ENbase and ACCEL and is without a doubt the most intriguing software package I have ever evaluated. Simpler than normal assembler language in its structure and language requirements, but several hundred times faster and more powerful than BASIC and allowing access to the computer at its lowest level without being too complicated for a competent BASIC programmer, this utility is a programmer's dream package.

On a different level is QASM - described as a bridge to machine code and does on a lesser level what the more sophisticated S.B.E. accomplishes it gives an easy entry to machine code.

Some prices have altered. Devaluation has had the major effect on costs although the Sales tax drop has lowered our media prices.

To make up for the rises we are offering some seasonal specials that will remain at the same price for the next 2 months.

The most spectacular of these are the products over which we have some control, mainly due to Royalties being paid either on a percentage basis or prepaid before our currency lost all meaning.

DOSPLUS 3.5, I am pricing \$100 below the previous levels at \$165.00. This DOS is the best there is.

QUIKPRO is reduced by \$50.00 to \$99.00

and most Arcade games are now a silly \$9.95

Grab these while you can and Merry Christmas to you all.

On a different note, we do have software that is not notified in our catalogue, generally because we only keep small quantities and cannot always guarantee to have stocks on hand. We have a few SUPER UTILITY Ver. 3.2 as well as the Model 4 version (each \$199.00) and a couple of copies of ELECTRIC WEBSTER (\$349.00).

Software available for MODEL 4 (in Mod. 4 mode) include LAZYWRITER, DOSPLUS, SUPER UTILITY.

IBM and TANDY 1000 and 1200 software available includes , LOTUS 123, FRAMEWORK, DBASE III, and the pfs Series (FILE, REPORT, WRITE & PLAN) as well as WORDSTAR PROFESSIONAL.

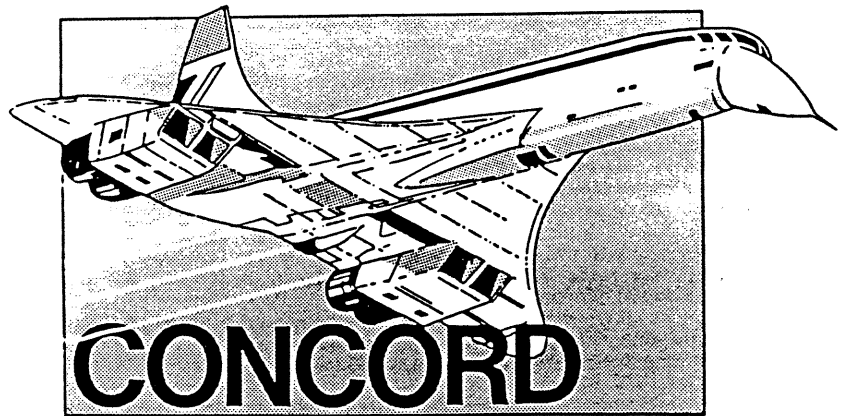
BOOKS - HOW TO DO IT ON THE TRS 80 and MACHINE LANGUAGE DISK I/O both reduce to \$39.95. GAMES AND GRAPHICS will cost \$24.95. (All these prices are only while our meagre stocks last; the NZ dollar makes it uneconomic to bring these in any more as the price would be too silly, and this is in the nature of a sell-out.

UPDATES

SYSTEM DIAGNOSIS is completely rewritten. In my opinion this is an essential program for any Model 1/3 or SYSTEM 80 computer owner. Due to an error we have been selling this at 50% of the cost that it sells for in America and we have been under pressure to alter that. Due to the rewrite, with so many new features that we have rewritten the program description also (see Pages 1.19 to 1.21), we have had to agree to bring our prices to the US one. PASCAL is further improved in minor ways to Version 6.2

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.



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.

ADVENTURE GAMES

QUEST — A DIFFERENT KIND OF ADVENTURE

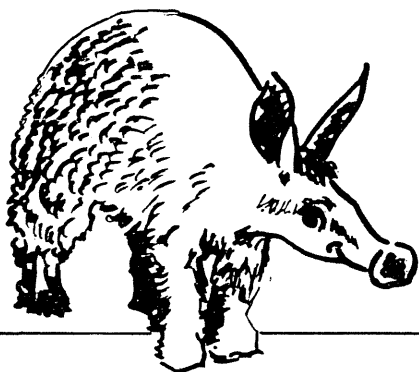
QUEST is played on a computer generated map of Alesia. Your job is to gather men and supplies by combat, bargaining, exploration of ruins and temples and outright banditry. When your force is strong enough, you attack the Citadel of Moorlock in a life or death battle to the finish. Playable in 2 to 5 hours, this Adventure is different every time.

Memory Requirement 16k	80C	41-1915
TRS-80 Tape Color	I/III	41-1923
TRS-80 Tape Model 1 & 3		
SYSTEM 80 Tape Mark I & II		

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 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 a block of 100 cells on four levels. The instructions include two sample player 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. In your search for the elusive treasure, you will have to fight monsters of varying strengths, avoid numerous traps, and use the full potency of the 6 magic items. The good news about this game is that all is not lost if you are killed. TREASURE TROVE is a three generation game, this 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 may transfer it if he wishes.

Memory Requirement 16k	11-1907
TRS-80 Tape Model 1 & 3	
SYSTEM 80 Tape Mark I & II	



QUAD PACK SPECIAL

PURCHASE ALL FOUR AND TAKE \$15.00 OFF THE TOTAL PURCHASE PRICE

AARDVARK ADVENTURES

These four Adventures from Aardvark are written in Basic, are full featured, fast action, full plotted Adventures and take some 30-50 hours to play. They each require a minimum of 16k memory, are available on Tape and are compatible with the TRS-80 Color, Model 1 & 3, and SYSTEM 80 Mark I & II.

ESCAPE FROM MARS

Tape 80C	41-1910
Tape I/III	41-1918

This Adventure takes place on the Red Planet. You'll have to explore a Martian city and deal with the possibility of hostile aliens to survive this one. A good first Adventure.

PYRAMID

Tape 80C	41-1911
Tape I/III	41-1919

This is a particularly challenging Adventure. It is a treasure hunt in a pyramid full of problems. Exciting and tough.

TREK ADVENTURE

Tape 80C	41-1912
Tape I/III	41-1920

This Adventure takes place aboard a familiar starship. The crew has left for good reasons, but they forgot to take you, and now you are in deep trouble.

HAUNTED HOUSE

Tape 80C	41-1913
Tape I/III	41-1921

This is a real adventure - with ghosts and ghouls and goblins and treasures and problems - but it is for the kids. Designed for the 8 to 12 year old population and those who haven't tried an Adventure and do not wish to be disillusioned with their first attempt.

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 against the west side of Africa and Spain and stretches westerly to Alaska. The map scrolls automatically as you travel the globe. One of the real advantages of this game over one or two similar ones that we have played is that it will change every time you play. 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 and to find each cube segment you must attempt to dock at a specific port on a specific continent. In the first instance no clues are given, but as your failures mount 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 & Y coordinates at any given time together with the damage estimate and the number of cubes you have collected. It is in this area also that the position of the game, the details of attacks, and any clues are reported. 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 then then return to the sea to continue your search. As far as we have been able to ascertain, CUBE HUNT is compatible with Disk Basic.

Memory Requirement 16k
TRS-80 Tape Model 1
SYSTEM 80 Tape Mark I & II

11-1903

DERELICT — A TOUGH ADVENTURE FROM AARDVARK

This Adventure should keep you locked into your keyboard. It takes place aboard an alien ship that has been deserted for a thousand years - and is still dangerous!

Memory Requirement 16k
TRS-80 Tape Color
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

80C 41-1914
I/III 41-1922

WUMPUS — AN OLD FAVOURITE

Probably one of the earliest computer games in an updated fresh version. 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 around 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!

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-1909



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 reach 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 climbers 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 correctly, 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 or these matter 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 you use oxygen, better still if each climber 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 the camps. The program is available on tape or disk. A game may be saved for future use on the disk version.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

Tape 40-1918
Disk 40-1919

Magic Trilogy

A SERIES OF THREE ADVENTURES WRITTEN IN BASIC AND RECOMMENDED FOR YOUNG CHILDREN

When one comes to think of it there is no reason why an Adventure should not be written in Basic. Some of the earlier one 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 standard in the industry. We elected to publish this Trilogy of Basic Adventures as they follow the structure of many of the machine language Adventures currently on the market. 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. At any rate, in each of these Basic Adventures, the speed problem is pretty well overcome. It is certainly true to say that there is some delay after an instruction is entered and the computer complies. However, we feel that this does not seriously detract from the enjoyment of the game. The author Ken 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.

FAIRYTALE ADVENTURE

This is the first in the Trilogy and is aimed at family participation. Its theme is fairy stories and nursery rhymes that all interconnect to provide "souvenir" treasures from the stores. We have found that these stories have a "captivating" effect on young children, 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.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-1904

WONDERLAND ADVENTURE — PART TWO IN THE TRILOGY

WONDERLAND ADVENTURE 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. While some people may carry an inbuilt discrimination against fairytales and wonderlands, we suggest you attempt them. They are surprisingly good fun. After all, it isn't very often that you get the chance of playing croquet with flamingo on a computer!

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-1908

DREAMWORLD — PART THREE OF THE TRILOGY

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 work previously inaccessible. The player can move from dream to real world, but not vice-versa, quite often fantasy becomes confused with reality. The command WAKE always terminates a dream and returns the player to his bed. There are 12 treasures 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 adults, it is equally fair to say that the adults that we have seen playing it seem to thoroughly enjoy a fleeting trip down memory lane.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-1902

MAGIC TRILOGY SPECIAL OFFER

PURCHASE ALL THREE ADVENTURES AND TAKE \$10.00 OFF THE TOTAL PURCHASE PRICE

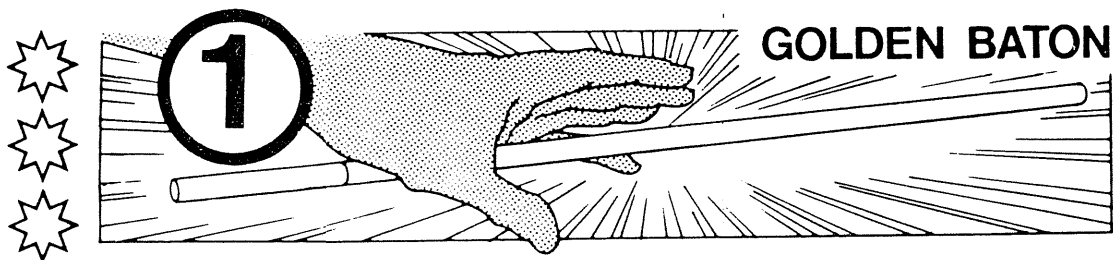
Mysterious Adventure

MYSTERIOUS ADVENTURE is a series of Adventures written by English author Brian Howarth. The feedback that we have had from customers is that the quality is better than the well known Scott Adams series. At the moment the series consists of 5 MYSTERIOUS ADVENTURES. To give you a preview, the additional Adventures planned for 1983 are:

Circus, Perseus and Andromeda, Waxworks, The Ghost of Mars, Ten Little Indians, Beyond Infinite, After the Fire.

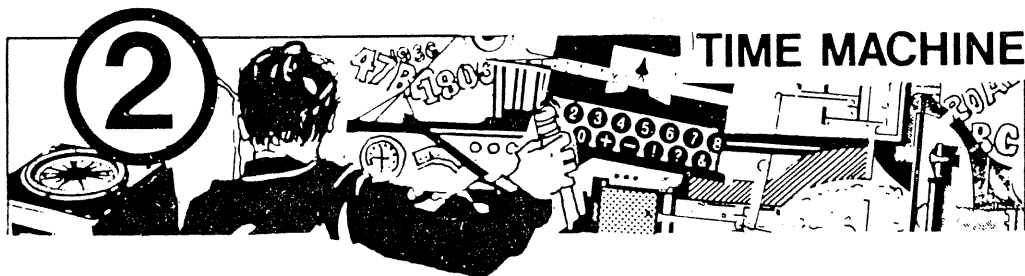
All the MYSTERIOUS ADVENTURES are written in machine code and are therefore very fast. Lower case from the third MYSTERIOUS ADVENTURE is fully supported and the full 16k is used for the Adventure itself. Synopsis sheets can be purchased separately. The MYSTERIOUS ADVENTURE series are available on either tape or disk with a Memory Requirement of 16/32k, and are compatible with TRS-80 Model 1 & 3, SYSTEM 80 Mark I & II.

ADVICE SHEETS are available for those customers who get stuck during an Adventure. It should be emphasised that they are not step by step instructions, but are merely items of advice to help you out of "sticky situations". The policy at MOLYMERX is that we do NOT give clues over the telephone - such advice we feel detracts from the spirit of our Adventures. For those customers who remain totally frustrated, rest easy, we are currently preparing a series of ADVICE SHEETS for all of our Adventures. They will be available throughout 1983. Please be sure to specify on the order form the Adventure for which you require assistance.



The first of Brian Howarth's Mysterious Adventures. This Adventure is a little easier than the others, however you must still overcome numerous problems and obstacles before being able to retrieve the mysterious Golden Baton.

Tape	11-1905
Disk	11-1916



The second of Brian Howarth's Mysterious Adventures is compounded by the dimension of time. Recommended for those Adventurers who enjoy a sense of historical intrigue.

Tape	11-1924
Disk	11-1925

3

ARROW OF DEATH

(PART I)

You and Sorcerer Zarda must restore the Kingdom from the engulfing sense of bitterness and ill feeling that has forced the ruler to flee the palace. This program contains 60 objects to manipulate and approximately 30 problems or puzzle to solve.

Tape 11-1926
Disk 11-1927



4

ARROW OF DEATH

(PART II)

Having successfully completed PART I you are in possession of the component parts of the Arrow. These you will need to destroy Xerdon the Evil, the source of the ill which has befallen your homeland. You now find yourself on the fringe of Desolation Marsh with no clear idea about what to do next. The main objective is to seek out the only man able to create a Magical Arrow from the parts which you now possess. This man is Arnid, the royal fletcher. However, he has been kidnapped by the minions of Xerdon the Evil who have somehow learned of your intent. Hence you must set off in search of Arnid. Danger lurks at every step and your only hope of survival on this quest is to rely on quick wits and cunning!

Tape 11-1928
Disk 11-1929

5

ESCAPE FROM PULSAR 7

You are alone . . . or almost alone on the space freighter "Pulsar 7". As you sit in the relative safety of the social room, your thoughts drift unwillingly back to the day two weeks ago when the nightmare began . . . It started out as a routine mission, an exploratory flight into the outer regions of the Xanotar system. The purpose of the mission was, as always to deliver the precious ore Redennium to minor planetoids whose civilisations had evolved beyond primitive nuclear power and were seeking out new methods of energy transference in these far flung regions of the Xanotar system, consequently most governments of these planetoids were only too eager to accept samples of new elements, particularly Redennium whose energy transference characteristics were second to none. After successfully trading the current load of Redennium and also receiving as part payment of the consignment a strange but interesting creature for the intergalactic zoo in your home planet, you and your crew set course for home. Initially the trip was uneventful except for a minor disturbance when the creature broke out of its cage and took to rolling about playfully in the remains of the Redennium ore left in the cargo hold. After recapturing the creature and placing it back in its cage the Pulsar 7 resumed its monotonous course for home. In the following days, however, the creature became restless and began to grow at an astonishing rate. It was decided at this point that the creature was likely to become a danger to the crew and should therefore be sedated for the remainder of the journey home. The decision came too late. The creature, now the size of a small horse, had ripped open its cage and savagely killed and eaten two of the crew members. It has concealed itself somewhere aboard the gigantic freighter. Since then the creature had accounted for all of the remaining crew except yourself. Your only option now is to abandon the freighter and attempt to make your escape in the frail shuttle craft . . . if you can avoid the deadly creature!

Tape 11-1930
Disk 11-1931

6

CIRCUS

CIRCUS - THE SIXTH MYSTERIOUS ADVENTURE

Your car coughs and splutters briefly then grinds to a silent halt. You curse inwardly as you stare vainly at the petrol gauge. You have run out of petrol miles from anywhere, no petrol stations for miles around and it will soon be dark. Grimly, you lock up your car and take the petrol can from the boot. After a brief survey of the surrounding terrain you set forth in search of help, hoping to come across a remote farmhouse or village. Three miles further down the road your hopes of rescue are beginning to dwindle when you suddenly hear the faint sound of music coming from somewhere ahead. You step up your pace and head toward the sound, as you reach the brow of a shallow hill your eyes are met by an inexplicable sight . . .

About a mile away nestling in a small grassy valley you see a huge Circus tent. Wafting up the hill toward you come all the familiar sounds of Circus activity, bells clanging, children's laughter, a brass band playing, lions roaring . . .

Eagerly you set off down the hill toward the strange spectacle, as you approach the huge tent you puzzle about why there should be a Circus held in the middle of nowhere and begin to look around for someone to ask about obtaining petrol. You reach the outer fences of the Circus ground and open the gate . . . Suddenly all sound is cut off as if by the blade of some gigantic knife. In a split second this whole scene is transformed from one of bustling activity to the silence of a graveyard. Bewildered by this unearthly transformation you tread fearfully toward the entrance of the now deserted tent . . . Darkness is falling and this is going to be a long, long night

Tape 11-1932
Disk 11-1933

7

FEASIBILITY EXPERIMENT

FEASIBILITY EXPERIMENT - THE SEVENTH MYSTERIOUS ADVENTURE

Far beyond the outermost Galaxy of our Universe, beyond the wildest imaginings of mortal men lies a newly-born World. A World manufactured artificially from the raw materials of the Universe. Painstakingly created by the pure thought processes of being immeasurably superior in intellect to ourselves. Beings who possess no physical form, but exist only as clouds of pure mental energy, capable of projecting their will over infinite distances.

At the geometrical centre of this artificial world there exists an immense cavern, created by these beings as a place of worship. The one solitary object of worship in this shrine, a statue carved in the image of mortal man. At the base of this statue are inscribed the three words: ALEXANDER THE GREAT.

Millions of years after these beings had discarded their physical forms as an intolerable burden, their perceptions were clouded by a catastrophic vision of their own impotence. After eons of roaming the universe, fascinated by their own ability to create or destroy whole galaxies at the merest whim, they slowly became aware of their disastrous handicap . . . their absolute inability to reproduce the one thing that would ensure their eternal existence . . . themselves.

As their power began to wane, their energy slowly dissipating over the vastness of space, they began the desperate search for a sustaining life force. At length their thoughts drifted to our world and here they beheld the spectacle of a great Warrior. They were invigorated by this spectacle, drawing power from the life force of this charismatic figure. Hence, they retired to a region beyond all reach and created for themselves a place of worship, believing that such worship could guarantee the survival of their race.

Eventually they realised that this was not enough, a mere image of a hero could not sustain them; they would have to find a real, living hero and draw their essential life force from this. To this end they built on this artificial world a scenario such as they could use to test the heroism of their subjects, for their hero would have to be brave indeed to satisfy their hunger for life-force. Their thoughts turn again now to our planet. . .

As you sleep this night, your dreams are disturbed by a ghostly voice; at first the voice seems to ask you gently to follow it; at your vague refusal it becomes more insistent, eventually growing into a howling demand for your presence. As your last remnant of resistance is shattered, you jerk awake to find yourself on the floor inside what seems to be an old mansion. As you raise yourself up and try to make sense of your surroundings, you have no way of knowing that you are now the subject of a . . . FEASIBILITY EXPERIMENT.

Tape 11-1934
Disk 11-1935

THE WIZARD OF AKYRZ - THE EIGHTH MYSTERIOUS ADVENTURE

Begin the Adventure in the Throne Room of the Palace. The old King grieves for his kidnapped daughter and the theft of the Crown Jewels. All the King seems to have left now is advice! He beseeches you to rescue his daughter from the evil wizard. If you succeed your reward will be priceless.....failure will bring certain death.

Memory Requirement 16/32K
TRS 80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

PERSEUS AND ANDROMEDA - THE NINTH MYSTERIOUS ADVENTURE

Travel into the realms of ancient mythology....Battle with grotesque monsters and supernatural powers as you search for the hidden secrets of myth and legend....

Memory Requirement 16/32K
TRS 80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

TEN LITTLE INDIANS - THE TENTH MYSTERIOUS ADVENTURE

The mystery begins with a train journey into a strange country. What secrets are held by the strange country mansion? What meaning is attached to the strange idols? Maybe you will find out if you live long enough....

Memory Requirement 16/32K
TRS 80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

RANDOM DUNGEON GENERATOR — 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 least, however, for users of the TRS-80 and SYSTEM 80, this problem has been solved. RANDOM DUNGEON GENERATOR is a suite of three 16k programs which allow the user to generate his own specification 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 content 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 spells he has available is displayed. It is then up to the players to decide their actions, and the umpires 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 be easily replaced, if appropriate, but 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.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-1906

CITY ENCOUNTERS — GOES WITH RANDOM DUNGEON GENERATOR

CITY ENCOUNTERS is a companion program to RANDOM DUNGEON GENERATOR. It is a game aid for umpires controlling "paper and dice" fantasy games. When used in conjunction with the sets of rules supplied 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 a city for both inexperienced and experienced players and player characters. Typical city adventures for lower level characters might include pub brawls, burglaries, assassinations, rescues, attacks by rival 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 their 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 player's 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 into 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 to 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 build 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 offerings or seeking employment gather. The program details the type of encounter, (e.g. attack, insults, questions, propositions, pocket pickings 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 and 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. Note that this program is not a complete game in itself and must be used in conjunction with a set of fantasy rules.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-1901

EPIC HERO

EPIC HERO is a new suite of machine code Adventures written by English author Marc Leduc. As always with an adventure series, each one is self-sufficient in that it is not necessary to have one to play another. Inevitably, when single new adventures are issued, let alone a new series, it starts off the old debate as to which author produces the best adventure. We are going to leave this one strictly to you, the customer. They are mostly similar in format, but for those not yet initiated in adventure games, the format is a discussion with the computer whereas it acts as your guide through weird and mysterious circumstances. It being the object of the exercise for the player to either find treasures or carry out some pre-defined course of action. As the player goes along he is given clues. Most of these are supposed to be logical but as adventure solvers have become more proficient, so adventure authors have tended to make things more difficult by not following the law of logic as closely as in early days.

One of the interesting points about Marc Leduc's programs is that he has placed himself in what he calls "cameo appearances" in each adventure. If you get to around half way through, or just over half way, and you have not met Marc, then you are on the wrong track. If you do meet him it is confirmation that you are on the right track.

The EPIC HERO series are available on either tape or disk with a Memory Requirement of 16/32k, and are compatible with the TRS-80 Model 1 & 3, SYSTEM 80 Mark I & II machines.

EPIC HERO 1 - *OCEAN HUNT*

All the fun and fascination of a treasure hunt out on the ocean briny. The object 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? This is for you to find out, but you must be careful. A gentle hint - take swimming lessons before you start this one.

Tape	11-1936
Disk	11-1937

EPIC HERO 2 - *DUNGEONS OF DERQJHEN*

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 Derqjhen. King Brion needs this because he is having problems with the evil wizard, Sharleobon. 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 wit, 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. As the same time you should be aware of the Keeper!

Tape	11-1938
Disk	11-1939

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 have been 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.

Tape	11-1940
Disk	11-1941

STRATEGY GAMES

TRIUMPH OF ROME — A ROME WAR GAME

Set at the beginning of the 2nd century B.C. the game depicts the war between Antiochus III and 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 eastern 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, 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.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2011

EMPEROR — TRY RUNNING THE ROMAN EMPIRE

EMPEROR 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 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 three centuries with each century reflecting a different set of historical circumstances. During play Legions must be raised, taxes inflicted and troops moved. The choice of Generals can be 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 outer Britannia.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2014

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 the co-author of EMPEROR. It is a long game and a complicated one. For this reason, provision is included to save 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 B.C. 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 results of any conflicts are determined. Included in the program are maps of Italy, Spain, Africa and Sicily, which although in different scales are continuous with one another. The players at all stages must take into account various troop movements, treasury reports, recruitment and wars. An historical description of the period accompanies the documentation.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2006

KING ARTHUR — A SHORT HISTORICAL SIMULATION

This program is written by Dr Bodley-Scott, the author of 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 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. 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. Also on the screen and to the right of the map is a status report listing the provinces currently under British control, together with their strategic strengths. 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 covers a period of 10 years and the players' performance is assessed at the end of that time.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2007

HAMURABI

This game is for those who prefer a thought provoking game to an action one. You are appointed Governor 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!

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2005

CRUSADERS — SARACENS AND CRUSADERS

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 you will find a new Saracen army moves into the Kingdom for 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 siege and take castles and fortresses that they have not previously moved to. In this way the Saracen army that has been sieging for a few years may be reinforced by a new army, which may be sufficient 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 siege, the only way to give them food is to send a caravan, which costs money!

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2002

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 the ship's situation, except of course for the damage suffered. The program is written in Basic and after the program is entered, the initial map displayed shows the relevant positions of the ships with the Graf Spee always centrally disposed. General information about the Graf Spee and the exact details about the British ship 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 torpedoes and exit.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2012

NAPOLEON — A WAR GAME WITHOUT JOSEPHINE

NAPOLEON is a war game that takes place in Europe with the starting date of June 1798. You are playing the part of 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, 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 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 shows a particularly fresh approach to computer war-games.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2008

BATTLE OF BRITAIN — BY A SERVING AIR FORCE OFFICER

Terrific fun and completely authentic. The graphics of S.E. England and the N.W. French coast are 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 in sorties, so you are given radar information on the approaching German bombers. The graphics of the actual combat have been 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 onto 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 your tail 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 strategy and action games this is the one for you!

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-2001





MAZE GAMES

LABYRYNTH — 3D GRAPHICS FOR THE COLOR COMPUTER

With amazing 3D graphics you fight your way through a maze facing real time monsters. The graphics are real enough to cause claustrophobia. This game has tremendous realism and will keep you enthralled at your keyboard.

Memory Requirement 16k 41-2307
TRS Color Computer Extended Basic

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, furthermore, it only 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, 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 have to get yourself into a position where you are surrounded by rocks and mines! The rocks of course are visible. Your path through the minefield is plotted, this enables you to retrace your steps - however it doesn't get you too far 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, this 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.

Memory Requirement 16k 11-2304
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

LABYRYNTH — AN EXCELLENT MAZE GAME

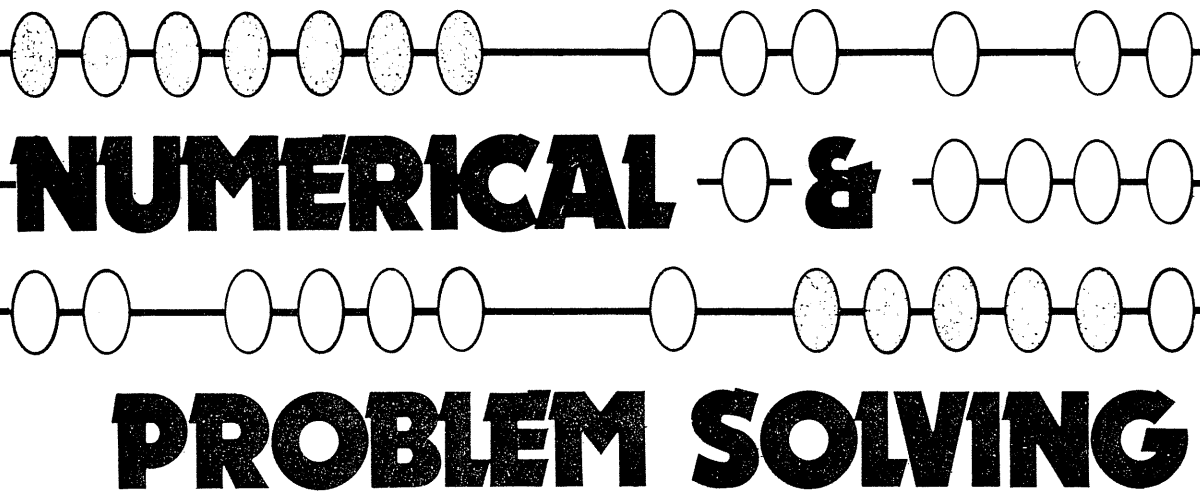
We do not often get excited about maze games, however this is one of the best we have seen. Normally, with maze games the player is given a plan view - as if he or she were looking down from the top - and one has to guide a "third party" with various control keys. MINEFIELD is a good example of this process. 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, the authors of the program, 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. Either aid can be selected at will. 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 which you are looking. The maze is made up of 16 x 16 cells - the word is deliberately chosen!

Memory Requirement 16k 11-2306
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

FOREST OF MORDOR — WATCH THOSE DWARVES

Although this program just sneaks into the maze category, it could be said to be a direct descendant of an Adventure game. The game is played on board which appears on you 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, 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 creature temporarily and enabling you to move. The player is armed with some arrows which when shot will destroy the first thing 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 moves 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.

Memory Requirement 16k 11-2303
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II



NUMERICAL & PROBLEM SOLVING

DESCRIPTIVE STATISTICS — MADE EASY

Many statistic 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 distribution of the values at high and low resolution 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.

Memory Requirement 16k
 TRS-80 Tape Model 1 & 3
 SYSTEM 80 Tape Mark I & II

11-2501

**MATRIX MANIPULATOR — COMPLETE NUMERIC ARRAY
MANIPULATION**

This program enables the user to set up a two dimensional array (rows and columns) or numeric data and thereafter manipulate it in accordance with some 33 commands. The array may be stored for later display with our GRAPH PLOTTER program, or by employing a means of regression analysis or some other linear program. The commands available in this program are as follows:

IR: Input by rows	IC: Input by Cols
LL: List last line	IX: List input cmds
LR: List one row	LM: Backspace matrix
LE: List last entry	BS: Backspace pointer
LC: List one Col.	PS: Set pointer
LO: Locate pointer	DI: Dimensions
HO: Home pointer	CM: List commands
MO: Change mode	XC: Exch 2 cols
XR: Exchange 2 rows	SR: Serialise row
IN: Invert row or col.	SO: Sort in asc. order
SC: Serialise col.	ZC: Zero one col.
ZR: Zero one row	NC: Name one col.
ZM: Zero matrix	SA: Sum/Mean/devn
NR: Name one rows	BC: Block copy
RN: Name all rows	QU: Quit run
CN: Name all cols	
TR: Transform	
SV: Save to tape	

Maximum dimensions of the array are restricted only by the amount of memory available, although only 40x40 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 are available, Level II and 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 the time - for which an expansion interface is required and the third to enable and disable the automatic command listing. This program is available on either cassette or disk. Please remember to specify which Level is required.

Memory Requirement 16/32k	Tape	11-2505
TRS-80 Tape/Disk Model 1 & 3	Disk	11-2506
SYSTEM 80 Tape/Disk Mark I & II		

GRAPH PLOTTER — SISTER TO MATRIX MANIPULATOR

This program may be used in conjunction the MATRIX MANIPULATOR 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 means 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 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. As with the Manipulator, extensive documentation is supplied.

Memory Requirement 16/32k	Tape	11-2507
TRS-80 Tape/Disk Model 1 & 3	Disk	11-2508
SYSTEM 80 Tape/Disk Mark I & II		

DIFFERENTIAL EQUATIONS — MADE PAINLESS

Extremely accurate numerical methods of solving differential equations are available, but 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 take of this in the composition of the program.

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 four 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 authors tells us, to the modified Euler method. Apparently the Runge-Kutta iteration is used extensively in numerical analysis program available on main frame computers.

Accompanying this program is an extensive manual, which not only takes the user through the program but discusses various ways on entering equations. Included is an exhaustive illustration of a sample program session including some general tips. Provision is made for the output of a graph of the results and a line printer is supported throughout.

Memory Requirement 16k	11-2502
TRS-80 Tape Model 1 & 3	
SYSTEM 80 Tape Mark I & II	

FAST FOURIER ANALYSIS

The FAST FOURIER TRANSFORM is a method of analysing complex signals to extract their harmonic content. The FFT is used in analysing stock market and commodity trends, as well as for signal and speech analysis. It is very useful tool for many, and a mystery to everyone else. The program was written by Dr A.H. Gray, an expert in digital signal processing and co-author (with J.D. Markel) of the classic text, "Linear Prediction of Speech". It includes three version of the machine language fast fourier transform routine assembled for 16, 32, and 48k machines. These machine language routines use array variables, defined by a supporting Basic program, to make data entry and retrieval automatic, without the need of PEEKs and POKES. The FFTASM package includes a short sample Basic program to demonstrate access to the subroutines as well as a fully developed 10k Basic program which includes sophisticated interactive graphing and data manipulation. The instruction sheets and examples thoroughly explain how the program operates, but are not intended to instruct the novice in the use of application FFT's in general. The machine language subroutines perform 20 to 40 times faster than their Basic equivalent (256 points in 12.5 seconds) and handle up to 1024 point complex FFT. These programs are compatible with Disk Basic.

Memory Requirement 16k	44-2504
TRS-80 Tape Model 1 & 3	
SYSTEM 80 Tape Mark I & II	

PASCAL

A COMPLETE PASCAL PACKAGE

This implementation of Pascal uses the Jensen and Wirth Pascal User Manual and Report as the based document and is very similar to the University of California Pascal. We should point out that this package is not intended to be in any way an instructional one in the use of Pascal. It assumes that the user has some knowledge of the Pascal language. There are some restrictions in this implementation, the most important being that labels and GOTO statements are not supported. On the other hand there are a number of extensions, the most important of which are PEEK, POKE, RND, PLOT (SET/RESET), AT (PRINT@) and INKEY.

Standard keywords are as follows:

AND	CONST	GOTO	REPEAT	ABS	EXP	OUTPUT
ROUND	EOF	DIV	DO	IF	SET	ARCTAN
FALSE	PAGE	SIN	MOD	DOWNT0	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	ODD	RESET	TRUNC
CASE	FUNCTION	PROGRAM	WHILE	EOLN	ORD	REWRITE
WRITE	WRITELN					

Non-standard keywords:

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

THE EDITOR: This is a straightforward but powerful screenbased editor, having a file format compatible with such popular word processing packages as Scripsit and Electric Pencil and the DOS commands LIST and PRINT.

COMPILER: This accepts standard ASCII file as input and produces standard TRSDOS object file as output. Compiler options include pausing on each error, producing a printed listing, generating line numbers for use in error messages, accepting multiple input files one after the other, and checking for values outside the declared range.

RUNTIME SYSTEM: Supplied as a command or object file, this contains all the interfaces between your program and the DOS and ROM routines used. Simple instructions are provided for combining this with your program to give a single executable command file.

Memory Requirement 48k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

11-1401

LANGUAGES

HARTFORTH — A FULL 79-STANDARD COMPILER FOR DISK

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

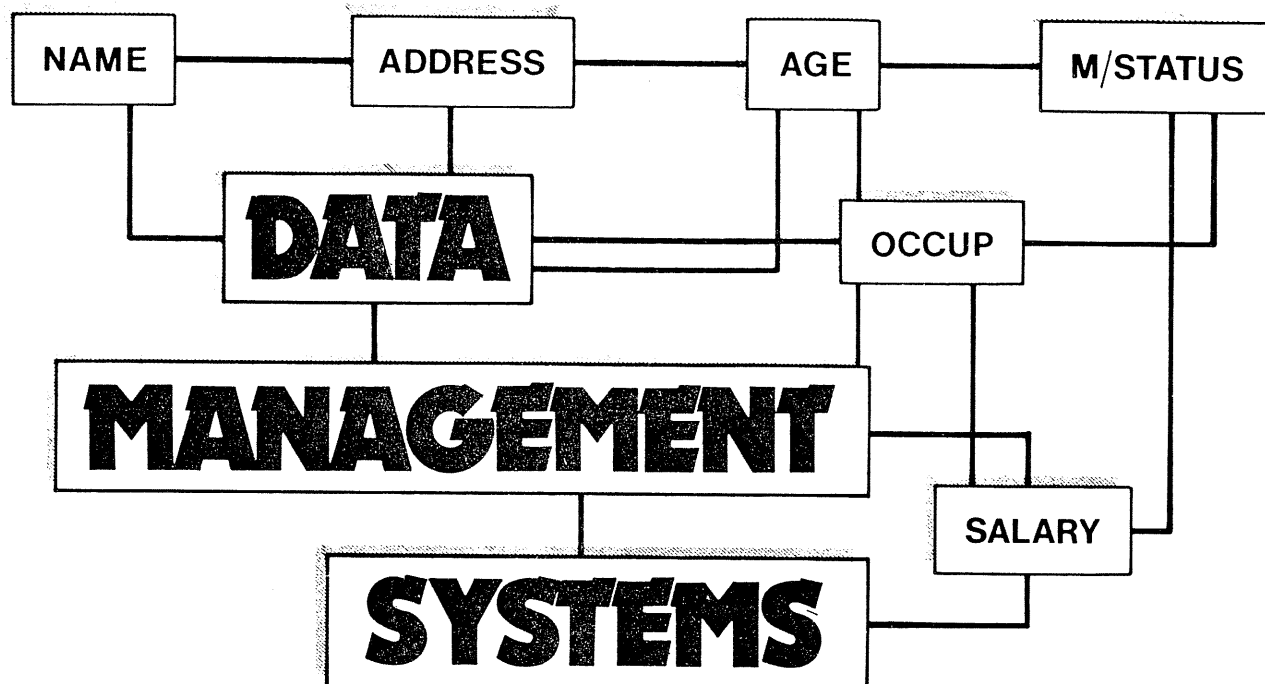
Above is described in considerable length Hartforth, which is a full Forth system for disk owners. Although this program is written by a different author, its breadth of content is such that it can also be called a full Forth. It contains over 200 different words and, even in a 16K system, it leaves 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.



PROTEXT — A DATABASE WITH TEXT EDITING

One of the major advantages of this program is that it has a built in text editor. This greatly facilitates the entry and deletion of data. When the editor is available the cursor assumes a flashing mode. There are seven commands in this mode: 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 moves the cursor to the right. Shift left arrow delete the whole entry and the clear key aborts the entire entry. Finally, hitting the enter key accepts the entry and moves the program to the next entry or function. An excellent feature of this program is that 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 record collection and you decide that you would like to access the file by choosing all the Beethoven records you have but not his piano concertos. Simply instruct the program to mark accordingly and thereafter the selection will be made automatically. The same could be made to apply to a business file of people who own you money. Three methods of search are permitted . . . either for the exact entry, that is search for Smith with Smith as the key, or for characters in the same position entered, for instance . . . th for Smith or finally floating, such as ith for Smith. This program is only available for disk users.

Memory Requirement 32k
TRS-80 Disk Model 1
SYSTEM 80 Disk Mark I & II

11-1608

PAGE FILE — AN ELECTRONIC BOOK

PAGE FILE is to some extent a specialised database in the sense that its format is quite unique. The title of the program probably best describes it. If you imagine a loose-leaf binder upon which you can write whatever you wish and then turn to another page, write something else, turn back if you so wish, and so on, you are getting pretty close to an understanding of PAGE FILE. Of course there is the provision to search the book. All one has to enter is the alphanumeric word or collection of characters required and instruct the search. It will then come up with the first occurrence and then proceed to each further occurrence. This feature is in fact an Instring search with the ability of being able to pick out parts of words or strings of figures. The editing features of PAGE FILE are quite comprehensive. First of all a page may be deleted, leaving of course a blank page. This may then be filled in with other data. There is the facility for repagination, that is to say, you can shift pages around the file. You can exchange pages, or better still, you can copy one page to another. Essentially, this feature allows you to manipulate and duplicate information easily. To enhance the program, the author has also included facilities for drawing diagrams, pictures, borders, and indeed any other graphic portrayal within the capabilities of the machine. All in all, this is a very easy program to use with countless applications in either the home or office.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

11-1607

INSTANT Sort and Search

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 timing 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. The reason is that this program was designed from the outset to achieve unbelievably fast sort and search times. Indeed we do not recommend this database for applications in which fast sorting or searching is not a prime requirement. The type of application for this type of program is practically unlimited. If you are looking for a program that will retrieve information at the virtual touch of a button, then INSTANT SORT AND SEARCH is the program you require. Be the application a club membership, a telephone enquiry system, an Estate Agents file, or as a means of indexing your stamp collection, the information is returned quickly and precisely. The prime commands and features of this program are as follows:

DATAFILE CREATION

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

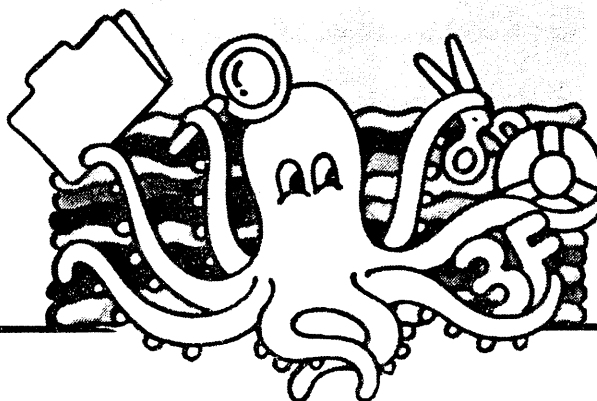
SORT/SEARCH

1. Sort up or down
2. Page forward or backwards
3. Select a range for search
4. Select or exclude a category
5. Select or exclude an 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 file
12. Printout sorted data

The data is displayed in columnar form and may be alphabetical, alphanumeric, integer or decimal. The number of columns is from 2 to 10 and each record may contain a maximum of 60 characters depending upon the number of columns used. Columns may be exchanged, deleted, extended, reduced, or a new column created within the file. Columns may be of any width within the screen capacity but integer or decimal columns more than six characters wide cannot be used to search within a range. The program consists of two parts. The first is used for entering data and the second for sorting or searching. The second part overlays the first when it is loaded so only 4k of memory is used by the entire program. The remaining memory space is available for your data. The amount of data that can be stored will of course depend upon the amount of memory available, a rough guide is that 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 rough guide to sort 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. The disk version of this program has been made fully compatible with TRSDOS, DOSPLUS, LDOS, and NEWDOS.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model I & 3
SYSTEM 80 Tape/Disk Mark I & II

Tape 11-1605
Disk 11-1606





INDEX — AN EASY WAY TO INDEX A BOOK OR DOCUMENT

This is a specialist program written entirely for authors and others who have to index documents or objects. It affords a very real time saving to such people and yet is very simple in its use. A name and a number are entered, separated by a space. Up to 700 such entries are allowed. After the entries are completed the program will sort them and display, either by page number or by letter. INDEX may be saved on tape and later added to so that not all the work need be done at one sitting. It is VDU orientated but the program can be modified by replacing a few PRINT's with LPRINT's to make it usable with a printer. Very simple and very useful!

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

11-1604

DATABASE MANAGEMENT SYSTEM — A VERSATILE DATABASE FOR TAPE OR DISK

This program is for use for systems with a minimum of 16k memory. You have complete freedom when making the file - you define the number of fields and you define their contents. The only restriction imposed upon the size and number of fields is the amount of available memory. Each field can be searched for a specific item or value, or sorted numerically or alphabetically. All the data in the particular file can be totalled. The file can be printed on a line printer or displayed on the VDU. The following commands are available within the system:

- 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 the line printer
- S: Sort the file
- T: Total the items in a field
- W: Write the file to cassette or 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 Pensioners are able to pay on a discount basis. Create a file with three fields; name, amount and pension number. This command will now total the second field, using the third as a key, in other words you can total the amount paid by Pensioners on your file. Furthermore, don't forget that this is a manipulation, the program is not committed, after adding the amount paid by Pensioners you could then total the amount paid by the remaining persons in the file. When you choose either the L or P commands, you have the following choices to format:

1. Print the entire file or part thereof. If you choose the latter you will be asked for the starting and ending record number in the display.
2. Print or omit the field specifiers (name, address or whatever).
3. Print or omit the record number of each record.
4. List in numerical order or sorted.
5. Whether or not you wish the print to be justified.
6. Whether or not you require 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 zeros suppressed and with all of the full stops between the dollars and cents in a vertical array.
7. How many blank lines you require between each record.

As can be seen this is an extremely versatile and complete program for sophisticated filing and manipulation of all types of file data. It is however, restricted by the amount of memory available and how that free space is allocated by the user. In general, a 48k disk system should be able to handle files of about 300 records of 10 fields each. A 32k cassette-based system would probably be about the same with a bit over. A 16k cassette system would run about 100 records of 10 fields with 10 characters reserved for each field. It should be borne in mind that you data can be split into a number of files, thus expanding the amount of data you can handle. The program itself before execution occupies about 6k of memory.

Memory Requirement 16/32k
TRS-80 Tape/Disk Model 1 & 3
SYSTEM 80 Tape/Disk Mark I & II

Tape 11-1601
Disk 11-1602

ENBase

ENBase - A TRUE RELATIONAL DATABASE MANAGER

Every once in a while a new software product appears on the market which forces us to reconsider the unused potential of our microcomputers. ENB is one such product. To visualise the potential of ENB, imagine a note-book in which you can jot down any item of information - number, word, fact, sentence, or inter-relationship. Now imagine the note-book implemented electronically. As well as noting down the facts you can retrieve them at will, systematically, selectively, or even haphazardly, through half-remembered relationships. You can update or correct them, and then print or display ordered reports. Through ENB's high-level interface, you can even write programs to process the data, but you will find that the procedure of input/update/display is enormously valuable in its own right.

The obvious comparison is against such packages as Tandy's PROFILE PLUS, Dick Smith's DATFILE, and Adventure International's MAXI MANAGER. Each system offers comparative features, however they all share the common feature that they are conventional indexed-record file managers. Where ENB differs is that it will support data inter-dependencies of any complexity, and permits ordered insertion and retrieval on any field, not just selected key fields. With ENB there is no need to generate separate application files, rather your information can be integrated into one database. This gives a structure and richness that often extracts value from the data that is lost with separate files.

ENB is applicable to an enormous variety of data applications. Some of the most obvious are:

CUSTOMER FILES Names, addresses, mailing-dates, initial contacts, purchase history etc.

SALES Orders, dates, outstanding accounts, statistics by product, salesman, area etc.

DENTAL APPOINTMENTS Names, dates, times, cancellations, etc.

PURCHASING Supplier addresses, discount rates, products and prices, classification etc.

MEDICAL RECORDS Patient's names, histories, drugs used, visits etc.

REAL ESTATE RECORDS Properties available, characteristics, prices, client preferences.

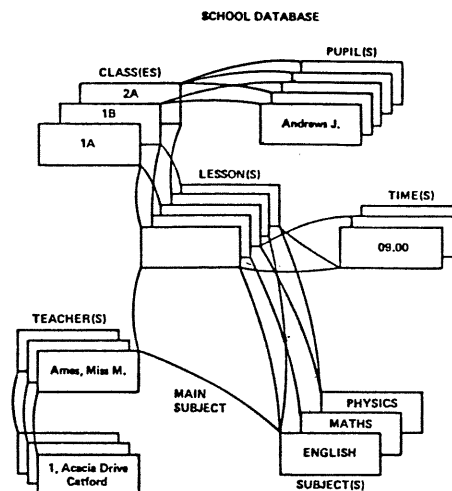
HOUSEHOLD ACCOUNTS Cheque book balancing, categories of expenditure, budgeting etc.

SCHOOLS AND COLLEGES Timetables, students, courses, rooms, exam results etc.

FARM DATA Crops, yields, fertilisers, livestock, prices etc.

RELATIONAL DATA

To help you comprehend what is meant by a true relational data-base manager, our example of a school's data-base goes a long way towards uncovering the various complexities.



Within ENB your information is held in SETs of fields, rather than in conventional fixed-format records. Each field can be up to 110 characters long while the size of your SET is constricted only by the available disk space. A data-base describing a SCHOOL, would include a SET of all TEACHER's names. Another SET might be all the PUPIL's names, another all the LESSONS in the timetable, another all the CLASS names. Links between these SETs describe the useful relations between the information in each grouping. A LESSON would link a TEACHER with a TIME, and a CLASS, and hence with all the PUPILs associated with the CLASS. A TEACHER obviously conducts any number of LESSONS, and in a conventional system, this means that the TEACHER's name appears again and again in every "record" which represents a LESSON. In ENB there is an internal relationship, the TEACHER's name appears only once, with internal links to the correct LESSONS. The advantage is self-consistency. For example, if a TEACHER marries and changes her name, a single, simple update keeps the whole data-base correct. Lingering, out-of-date duplicates are eliminated.

The fact that all SETs are consistent and ordered in their own right, independent of the links to other SETs is enormously powerful. Any SET can be viewed or printed in order, either in its entirety, or selected by certain constraints. So the school secretary can obtain an alphabetical list of all PUPILs, say, while a TEACHER can ask for just the list in one CLASS. The ordered list of TIMES, with their associated LESSONS, TEACHERs and CLASSES, gives the school printout, while a more complex enquiry may result in a single answer, for instance which TEACHER is teaching PUPIL John Smith, at TIME 10.30 a.m. and carries a free CLASS that same afternoon. Because any set can act as the ordering key, many useful unplanned printouts can be obtained from the information on store, e.g. TEACHER duty roster, LESSON time-table, ROOM occupancy, CLASS time-table, etc.

Where ENB offers a major advantage over such systems as PROFILE PLUS, DATFILE, or MAXI MANAGER is that it permits the addition of new fields without a total reorganisation of your existing data. Again, and using our existing example, suppose each CLASS was

ENBase

associated with a single ROOM, making it unnecessary to include ROOM as an associated SET within our data-base. However, exceptional cases arise, like gym or science classes that demand a special ROOM. The administrative ramification is that we now want to link a ROOM to only those LESSONS that are exceptions. This is easy with ENB - it's simply an incremental addition involving no reorganisation of the existing information. With a conventional data-base manager it can be a disaster, requiring a lengthening (and a reblocking) of existing records, even possibly a rewrite of existing programs.

The point to remember with ENB is that because of the flexibility involved in linking fields, more disk space is used. However this loss is offset by two related gains. Firstly each SET is held as a group of variable-length items, (the TIME, or the CLASS or TEACHER name) with each single item able to hold a maximum of 110 characters. Obviously, some names are long, some are very short. With ENB you don't have to allocate the size of your records in advance. Secondly, where one would usually allocate a field for either irregular or miscellaneous information, and thereby wasting valuable space, when using ENB it remains simply a matter of insertion when required.

Each SET can have associated with it various "build-in" characteristics. For example, values put into the SET are required to be stated in upper-case. This would be appropriate for the name of a SUBJECT, (ENGLISH, MATHS etc.), while not for TEACHERS (Miss M. Smith, etc.). Some SETs can be accessed by abbreviation, e.g. CATEGORIES, PRODUCT lists, etc. Another option is that a SET may be defined at any time to be CLOSED, i.e. no new members may be added (until it is OPENed). This would be appropriate for CLASS names, TIMES, ROOMs, etc. If an operator adding a new LESSON for example mis-keys the TIME, then this will be rejected by ENB, rather than added to the data-base, thus providing automatic validation of input data.

SETs may also be defined to hold either NUMBER or CHARACTER data, and an associated FORMAT can be specified to define how numbers should be displayed or printed. (The FORMAT is like a TRS-80 BASIC "USING" specification). Numeric data can be totalled and subtotalled, there is also the facility to interface with VISICALC DIF files, permitting the free movement of data backwards and forwards.

THE MENU MANAGER

ENB consists of two distinct components. The relational access method that stores the data on disk is in machine language, is relocatable, and is normally held in high memory, along with as many in-core buffers as you have room for. The second component is a menu manager, written in BASIC, which acts as an interface between the end-user and the access method. Using this component you are able to define the structure of your data-base (e.g. that a LESSON links a TEACHER to a TIME, a CLASS, and optionally a ROOM). Then you enter your information, via screens that the menu-manager generates from knowledge of the structure. (You don't have to define the screen layout). Then you correct, modify, or add to that data (or to its structure), and finally you display or print selected listings of the data.

The ENB menu-manager takes you through all this without any need for additional programming. For home use, or secretarial or clerical applications, or any of the many cases where the data-base is used as an intelligent file, the menu-manager will more than meet your needs. However, for business, and particularly business applications, there are invariably specialised requirements that require user programming. These include special formatting for preprinted forms or labels, and requirements like conditional discounts, special input constraints, conversions of existing files, and so on. As we mentioned early, a high-level interface is supplied in BASIC, to enable you to write these applications and examples are given in the manual.

CAPABILITIES

For the more technically orientated, ENB is built on top of the standard TRSDOS I/O calls, this enables ENB to run on any DOS which supports these calls i.e. DOSPLUS, LDOS, NEWDOS, NEWDOS80 etc.) ENB utilises in-core buffers and will minimise disk access as far as core permits. Performance depends on memory available and on the speed and capacity of your disk drives (including hard disk, if your DOS supports it through I/O calls). ENB will function on as little as a single drive and permits a single data-base to span up to 4 disk drives. (All disks comprising the data-base must be mounted simultaneously). Data integrity is achieved by use of commit points. If power fails, or you remove a disk unthinkingly, then on restart your data will be consistent to the last entry point.

Documentation supplied with ENB is to the order of some 150 pages. An added feature of ENB is an excellent tutorial guide. Not only is this discussed in depth in the manual but a tutorial file as a working demonstration is included on the product disk. ENB remains compatible with the TRS-80 Model 1 & 3 and SYSTEM 80 Mark I & II disk based machines.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

12-1609



SIR - SELECTIVE INFORMATION RETRIEVAL

SIR is written by Gordon Hatton who wrote Instant Sort Search, which is described on page 31.1 of this catalogue. If you are not familiar with ISS, it may well be of use if you turn back the pages and read the description; not because the present program is an update or upgrade of ISS, but because SIR is so big a database concept that it is required a sort written for it and what better than the ISS concept which has proved to be a Benchmark for fast sorts.

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. Everything in a planar database is held in one level. The base is split up into records and 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 single layer to another. A relational type database is non-planar. Each field is kept as a separate record. Perhaps the name is one, the address another, occupation another and so on. One file contains all 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. 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. 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 a large matrix or spreadsheet, so SIR provides a window on to an enormous analysis book. With SIR we are dealing with data which is normally alphabetic - but may be numeric, rather than the reverse. The data in the analysis book may comprise an entire disk. The great drawback of an 8 bit microcomputer, namely that far more data can be stored onto the disk than can be brought into RAM, is overcome by SIR.

With the advent of the 16 bit machines, this problem is slowly disappearing but 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.

Supposing one has a written analysis book used as a record book; an executive would pull out a pad and jot down the entries in the columns that are relevant to his application. Suppose, for instance, the first column is for name and then 15 columns of information are needed to record sex, age, branch, salary and so on. If our hypothetical executive is interested only in knowing the names of people who fit certain categories he may sit at his desk, run his finger across each name, check 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 SIR is similar to the relational database.

SIR comes with a demonstration staff file database on the disk. SIR is just as happy (and efficient) at constructing a file about branches - who works in which branch, how much 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 millions of permutations in column selection.

There are very few restrictions in the program. The most important is that a database in size cannot exceed one 40 track disk in single density on the Model I and in double density on the Model III. If this is considered to be any sort of a drawback, then the database can be split up 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 penalty. One has in excess of 30K to play with an one is talking about the window or sub-set, not the entire database.

We must make it clear that SIR is not an update to ISS. Hence, there are no update privileges available to present owners of ISS. However, Mr Hatton has been kind enough to supply us with a 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 straight ASCII and can be manipulated by most word processors.

Memory Requirement 48K
TRS-80 Disk Model 1 & 3
SYSTEM-80 Disk Mark I & II
TRS-80 Disk Model 4 in Model 3 Mode

TIME RECORDING

A SOPHISTICATED SYSTEM FOR ACCOUNTANTS AND OTHER PROFESSIONALS

The TIME RECORDING package we supply has been written by Understanding Ltd, an English software house who already supply the TRS-80 and SYSTEM 80 market throughout the Common Market and North America. In the first quarter of 1983 we will be releasing both a small accounts system and an outstanding Stock Control system to complement this program.

The TIME RECORDING SYSTEM provides both professional people especially accountants, but also solicitors, engineers, and other professional workers with a comprehensive cost ledger and work in progress recording system. The system is only available for the TRS-80 Model 3 with two disk drives. A 132 column printer is also required.

The following reports are produced from within the system:

1. Detailed cost accounts
2. Work in progress with a summary by clients
3. A fees listing
4. Control totals of different inputs
5. Audit trail of postings
6. A client index
7. Staff performance summary
8. Partners' financial summary

RESUME OF REPORTS:

COST ACCOUNTS: A ledger account is available for each client showing postings of the time charged, cost of time, disbursements, work in progress carried forward, and interim fees invoiced. The report is listed in number sequence against each partner.

WORK IN PROGRESS SUMMARY: A line by line listing in client order of work in progress carried forward, amounts of interim final bills, profit or loss account relating to each client. The report is listed in alphabetical sequence against each partner. The total work in progress and the number of clients per partner is also listed.

FEES LISTING: This reports shows the fees posted in each current month, with one line by allocated to each fee payment by the client. Each payment is flagged as to whether it is an interim or final fee. If a final fee is recorded, the work in progress is shown on the account up to an including the month the fee is dated, plus any debit or credit in progress. Fees are listed in client reference number sequence, within partner. Partner totals are printed separately.

CONTROL TOTALS: Monthly control totals are listed according to the hours chargeable and non-chargeable, current month and previous months postings, disbursements, interim and final fees, and profit.

EMPLOYEE SUMMARY: For the current month, the financial year to date, and the calendar year to date, there is shown for each employee, his hours divided into chargeable, holidays, illness, study leave, and administration. The report can be listed either alphabetically or alphabetically within charge out grades up to a maximum of 24 grades.

PARTNERS' FINANCIAL SUMMARY: Shows for each partner, the unbilled work in progress and fees invoiced for the current month and for the financial year to date.

VOLUMES:

200 fees per month	200 clients
4000 live transactions stored	70 staff
such as costs, disbursements,	
interim fees, journal entries etc.	

Memory Requirement 48k
TRS-80 Disk(2) Model 3

13-1712

BUSINESS MANAGEMENT PACKAGES

TANDYWRITER A MAILING DATABASE AND WORD PROCESSOR FOR THE TRS-80 MODEL 3

Written especially for the TRS-80 Model 3, TANDYWRITER is a very powerful database for merging information held on a mailing list with a document prepared in Scripsit. In this way documents reports or letters can easily be particularised or personalised according to any number of criteria as determined by your mailing list.

THE MAILING LIST: This has been designed to hold two sets of information for each address: the names and addresses, and up to 20 items of supplementary information as designated by the user.

SUPPLEMENTARY INFORMATION: With your ability to define up to 20 separate fields to hold this information, TANDYWRITER offers a vast range of applications. For instance, mailing lists for Estate Agents, Accountants, Doctors, business firms, or wherever a selection of a particular address is required. An example of a user defined data base is as follows:

Field Description:	Code	
Created by the user	letter	
(up to 8 characters each	(A to T)	Information provided by the
and 70 fields in total)		user for each field. From 1 to 32
		characters, filled with a maximum of
		100 characters in all.
Area	A	
State	B	
City	C	
Size	D	
Turnover	E	
Cr Limit	F	
Contact	G	
Client	T	

SELECTING RECORDS: Extremely powerful and flexible selection facilities allow both simple and complex testing of any information on file, together with user definable sorting keys. It will sort over any of the above fields, including name and address fields, applying up to 8 different types of selection tests viz: equal to, not equal to, greater than, less than, greater than or equal to, in between, not between.

FOUR TYPES OF REPORTS: Four different reports are available, sorted or unsorted, selective or non-selective, from a simple index to a full listing of each record. Fixed format address labels or user defined labels can be printed on almost any size of continuous label stationery with a unit size of not less than 7 cm by 3.5 cm.

BULK CHANGES: A very powerful tool enabling you to alter a specific item of information across a selected set of records with a single command.

SPLITTING AND MERGING OF MAILING LISTS: Mailing lists can be merged and split and generally rearranged as required.

VOLUME: Up to 600 records per disk. Works on up to four disk drives giving a maximum of 1800 records. Multiple mailing lists may be created on each disk.

TANDYWRITER is supplied in a high quality ring binder with some 80 pages of documentation.

Memory Requirement 48k
TRS-80 Disk Model 3

13-1718

FINANCIAL ANALYSIS A BUSINESS TOOL

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

1. Internal rate of return
2. Present value of a given cash flow
3. Present value to future value and future value to present value
4. Annuities from required present value
5. Time span of payments

The program uses well-known business equations, available from most books which cover the subject of financial forecasting. The program adopts a rather unique method of memory management using a "work sheet" which contains the results of the latest

computation of 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.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

11-1703

GRAPHIT GRAPHS AND VISICALC COMPATIBILITY

There are a number of programs which will portray graphs on a microcomputer. In fact, we stock one already, namely GRAPH PLOTTER. This program contains additional facilities, however it remains 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 that there should be a HELP command available at all times so that the users 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 graphs in almost any way he can think of. In particular, we had in mind the scale of the graph, in other words, its magnification or enlargement should be almost infinite. We are happy to report that these requirements have been met. With GRAPHIT you can do very nearly anything you might want to do with a graph. Incidentally, two types of graphing are available - either zig-zag (pen plot) or bar (histogram). These two options are interchangeable as some data is more easily displayed as a histogram and vice versa.

To explain the Visicalc compatibility first. In Visicalc you 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 to that program. There is, therefore, a complete interchange facility with the popular Visicalc program, as manufactured by Visicorp.

The best feature of GRAPHIT is that it 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, 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 that any data files which are produced must be saved to disk. The user has the facility for entering a title to the graph. Alternatively, GRAPHIT itself will give the file a name - "Graphit Data". A hard copy of the graph may be obtained. In other words, there is a command for sending data to a lineprinter. Alternatively a screen printer, which is supplied in most DOS's nowadays may be used. The data in tabular form may also be directed to the line printer. A particularly good feature is the ability of GRAPHIT to swap sides when it is displaying a graph. In other words, the X & Y axis can be exchanged at will. This function alone yields some very enlightening results. Equally as easily, the same data can be displayed in either a histogram (bar graph) or pen plot (zig-zag) format.

If you have ever worked with information from a graph, then you would be aware of the importance of scales of display. GRAPHIT selects its own scales automatically, however this need not remain permanent. With GRAPHIT you have the ability to either magnify or reduce either the complete graph or any section of your graph. This can be made to occur with a single keystroke. So far as numerical information is concerned, the range is from minus 100,000 to plus 100,000. This has been selected because it is all that can be reasonable displayed. If higher figures are required, then it is simple enough to reduce the scale and label each increment as one thousand.

An additional command which is easy to overlook is the ability to "correct" the axis. If, for instance, your Y axis has both positive and negative values, the graph will automatically select a scale with 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. A secondary feature, which again enhances GRAPHIT's user friendliness, that on almost all entries a default value is displayed. The end result is that the tabulation, plotting and display of graphs can be performed very easily with GRAPHIT.

GRAPHIT is supplied on disk and requires a minimum of 48k of memory.

Memory Requirement 48k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

11-1704

BILL OF MATERIALS
PRODUCT : DOUBLE GLAZED WINDOW

001

DOUBLE GLAZED WINDOW

CKD-MAIN
-REPORT-
ENTER VALUES

QTY DESCRIPTION

SIZE

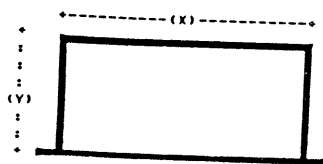


Figure 1

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

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
4 -006	1 -007	1 -008	0W-009
1 -011	##-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	
BUY IN PRICE PER UNIT FACTOR	010000
SELL OUT PRICE PER UNIT FACTOR	0027.25
	0028.11
CALCULATION VARIABLE (1)	TH
CALCULATION VARIABLE (2)	##

HIT ENTER TO BROWSE ANOTHER MATERIAL RECORD

Figure 7

CALCULATION RECORD - 001 -BROWSE-

CALCULATION DESCRIPTION	TIMBER CALCULATIONS
(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" x 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 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.

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

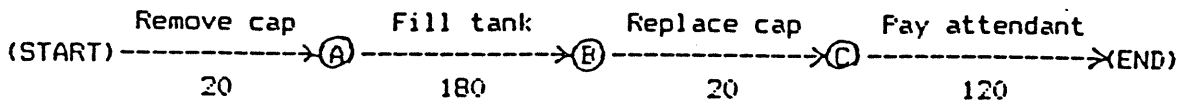
As will be seen, the first three are commands or options applicable to manipulating a database that has already been written. The fourth is to create an entirely new database. As always in databases, these two sets of functions often overlap. Hence, we will concern ourselves with the first three options. 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

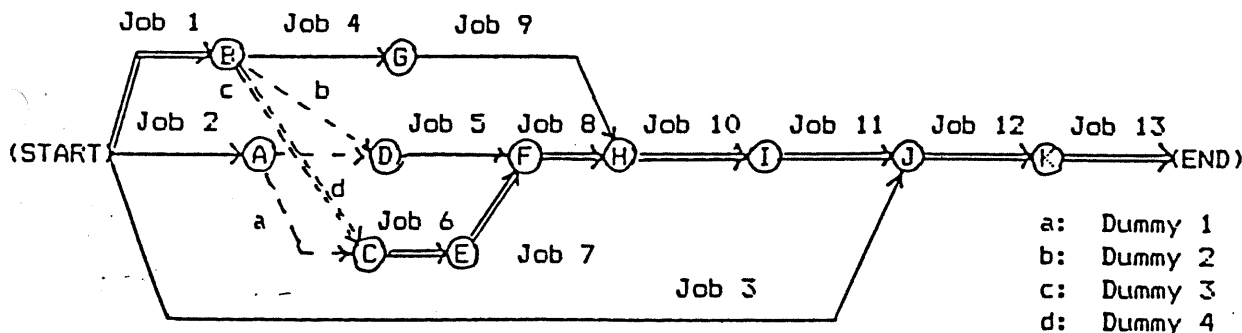
CRITICAL PATH ANALYSIS — OR PERT, IF YOU WISH

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.



Total duration: 340 seconds

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.



----- Job - - - Dummy ===== Critical path

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:

MAIN MENU

```

--> ENTER OR AMEND JOBS
LIST JOBS & PRIORITIES
LIST JOBS & DURATIONS
ANALYSE NETWORK
COMPUTE EVENT TIMES
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

File: CPATEST0/CPA:3
Date: 24/04/83
Units: DAYS
Mode: No analysis
Jobs: 13
  
```

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.

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.

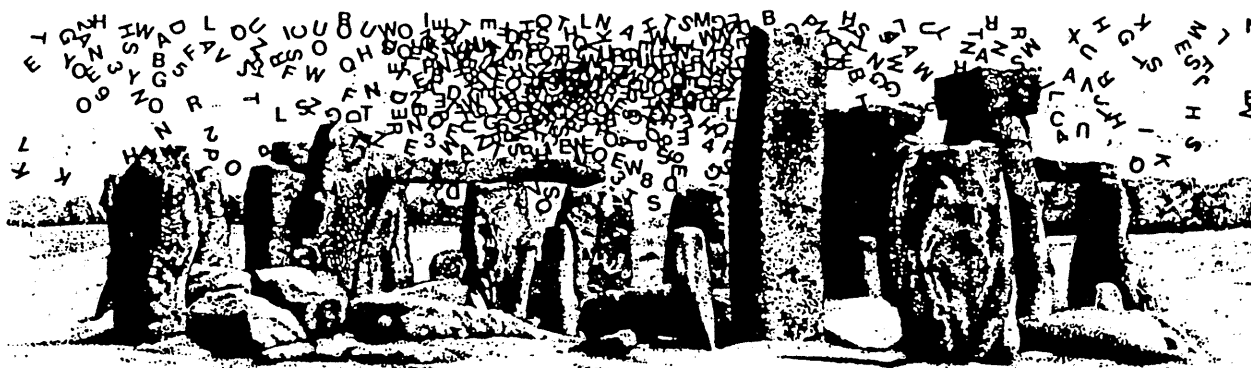
MAILIT – FOR SMALL BUSINESSES, CLUBS AND PERSONAL MAILING

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.



LEAVE THE STONE AGE BEHIND!

MACHINE LANGUAGE BUSINESS SOFTWARE

**** DEMO
DISKS**

**** DEMO
DISKS**

SYSTEM II

FOR TRS-80 MODEL III

FAST - NO FILE HANDLING!

FULLY INTEGRATED!

STOCK CONTROL

PURCHASE LEDGER

SALES LEDGER*

NOMINAL LEDGER

*** INCLUDES INVOICING AND STATEMENTS**

It constitutes, we feel, a landmark or breakthrough in TRS-80 software in that 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. 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.

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.

As far as we are aware there is no other suite of programs available for our machines combining the ease of use, sophistication and comprehensiveness of SYSTEM II. MOLYMERX has literally searched the business world for an accounting system which is the very best available and were in fact in the process of having software written for us in COBOL in Australia. SYSTEM II has halted this as we think this software is at the top of the heap.

**** DEMO DISKS - Available at \$49.95 each, applicable against purchase.**

Memory Requirement 48K
TRS 80 Disk Model 3 Only

SCRIPTR

A MAJOR UPGRADE FOR TANDY'S SCRIPSIT

Since the introduction of Scripsit for the Model 1 & 3 microcomputers, there have been a number of programs released onto the market which enhance the main features of Scripsit. Many of these programs are in fact patches facilitating the use of DOS functions and adding driver routines so that a wider range of printers could be controlled from within the program.

SCRIPTR is of the same genre, however it remains in a class of its own in that it adds many new routines to Scripsit to create a program of unmatched versatility. SCRIPTR patches Scripsit L/C, the standard Model 1 version of Scripsit. This version will also operate in the TRS-80 Model 3 under TRSDOS 1.3. SCRIPTR has been configured to work in a system using either single or double density disk, furthermore, the Model 1 version will work under any DOS that uses standard supervisor calls. As far as we can ascertain, the machine code of SCRIPTR remains entirely ROM independent. The major features of SCRIPTR are as follows:

1. **DOS REENTRY:** Infinite entry and reentry to the DOS from Scripsit and the unparalleled use of all DOS functions without disturbing the text buffer. Reentry to the text is performed by simply typing SCRIPTR.
2. **OUTPUT ANY CODE TO YOUR PRINTER:** SCRIPTR allows you to output to any parallel printer any code or code sequence. The codes may be used for graphics, printer control codes or special characters. SCRIPTR utilises a wide range of easy to remember mnemonic codes, these can either be transmitted independently or embedded in the text and transmitted with the document.
3. **COMPLETE MX-80/100 AND GRAPHTRAX SUPPORT:** SCRIPTR permits you to control all of the programmable functions of the Epson MX-80 and MX-100 printers directly from the text buffer. This covers some 24 printing modes as well as setting and executing variable tabs, linespacing, page numbering, linefeeds, page breaks, underlining, and super and subscripting. If you are using Graphtrax with your Epson printer then you can underline, italicise, and turn emphasised and double overstrike ON/OFF anywhere on the line, even on right justified text.
4. **WATCH YOUR PRINTOUT RUN:** With SCRIPTR you can command the text to be displayed on your monitor as it is being transmitted to the line printer. The speed of display can be varied, either on a character or line basis, with controls for automatic pausing or the completion of a section of text.
5. **DIAL-A-PRINT:** This feature works on any printer with the ability to separate carriage returns from line-feeds. If you are using an MX-80, you will require the special Epson cable. Effectively, this mode permits you to overprint any given line between 2 and 10 times. The result is particularly crisp copy, a desirable feature if you are preparing text for camera ready copy.
6. **WRITE FORM LETTERS & INSERT DURING PRINTOUT:** If you are regularly preparing standard form documents, maillists, or report forms, then SCRIPTR offers a unique feature. SCRIPTR gives you the ability to specify places within a document where you desire to insert information during the printout. The printer will stop allowing you to insert information directly from the keyboard, this same information is also transmitted to the text buffer.
7. **COMPLETE PRINTOUT CONTROL:** SCRIPTR gives you complete control of the entire printout. All of the original functions of Scripsit are retained and will work as per normal. Not only is the entire printout displayed on a line by line basis, but you may pause at any time and edit any line before it is transmitted to the printer. Furthermore, you can delete the text material in the buffer, send line and page feeds, adjust the display, edit a line, add graphic characters from the keyboard, change line lengths, even write in the margins or put footnotes at the bottom of the page.
8. **MACRO'S:** This facility give you the ability to re-use commonly used text or graphic sequences on succeeding lines without retyping them. In addition, this mode permits you to print vertical or horizontal borders using any of the MX-80/100 graphic symbols.
9. **DISPLAY ONLY PRINTING:** In this mode, SCRIPTR allows you to run a printout without printing anything on the page. The purpose of generating a "dry run" is to observe where Scripsit places the page breaks, graphics etc. The other feature of this mode is that it gives you single page printing from within a document, it also ensures that your headers, page numbers and footers remain correct.
10. **MERGING OF GRAPHICS:** SCRIPTR has a function call Picture which allows you to load into the document a display, for instance, bar graphs, tables and other forms of graphic reinforcement. For this feature you need to purchase CRAYON which is listed in the Programming Utilities section of this catalogue.
11. **EXCELLENT DOCUMENTATION:** SCRIPTR is accompanied by a 61 page manual. This is fully indexed for easy reference and explains many of the functions with examples. For your convenience, we have also included a number of appendices covering: the full range of Epson control sequences, the Epson character representations, a Decimal to Hex conversion table, and the Hexadecimal representations for the full range of upper and lower case characters printable on the Epson series of printers.

WORD PROCESSING & UTILITIES

12. **TEACHING MODE:** To help you through the documentation, we have included a teaching program to demonstrate the various features of SCRIPTR. Furthermore, all the control codes of SCRIPTR are listed on the back cover of the manual for easy reference.

There remains a number of features which we have not covered, suffice to say that SCRIPTR is an extensive piece of software. In effect it upgrades your existing copy of Model 1 Scripsit to parallel and in many cases go beyond existing word processor packages like Lazywriter and Super Scripsit. SCRIPTR is only available on disk and requires of copy of Scripsit L/C (Tandy catalogue number 26-1563) to work on either the TRS-80 Model 1 or 3.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

45-1505

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. TEXPRO has been developed to be compatible with 16k, 32k, and 48k machines. It is designed for an operator who used a word processor on an irregular basis, yet incorporates a number of features that one would expect to see on its bigger brethren.

For one, TEXPRO incorporates its own lower case together with its own video and keyboard drivers. In this respect it is able to add some special characters, for instance, left and right brace brackets are available together with a vertical divider. All parallel printers are supported, while it remains possible for the user to protect high memory for the location of a serial driver.

TEXPRO is essentially a menu driven program and 11 functions are available as follows:

1. Input - this supplies normal typing facilities
2. Edit - this command permits the insertion or deletion of lines. The cursor is controlled by the four arrow keys.
3. Display - permits the user to review the text on the screen with downwards scrolling being controlled by the down arrow.
4. File - stores the current text on disk.
5. Retrieve - the opposite of the above, loads text from cassette.
6. Merge - to rearrange the text in lines of reasonable uniform length. Of particular use after insertion
7. Tidy - right justify the text. Justification occurs by the insertion of spaces.
8. Print - sends the current print 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 - for use with upper case only. Indicates which letters are capitals

To explain these commands in a little more detail: Input will call the last line of the existing text to the top of the screen. In this mode the Clear key acts as a repeat key and a shift left arrow will delete the entire line. The right arrow functions as a tab key, while Enter causes the line to be store in memory. The Edit function gives access to the text already typed. In this mode 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. Text can be inserted using the shifted left arrow, furthermore, entire lines may be inserted or deleted. The Merge function arranges the text in lines which are within a specified range of lengths. The option of hyphenate is given from within this command. 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, lines per page, page length, print margin, standard paragraph insert, tab positions, hyphenation and a print option for normal, small, and heavy type (depending on your line printer).

The program we supply is in three versions: one for upper case, the other for lower case, and the third for users of the TRS-80 Model 3. Please be sure to mention which version you require.

Memory Requirement 16k
TRS-80 Tape Model 1 & 3
SYSTEM 80 Tape Mark I & II

Model 1 LC/UC 11-1504
Model 3 11-1508

PRESS: (L) LEARN WORD (R) REPLACE WORD (S) SKIP WORD
WORD IN ERROR: mistake

This is an example of a text being checked by HEXSPELL. The text scrolls up the screen as it is checked. When an error is detected, you have three choices.

1) REPLACE the incorrect word. The replacement word is INSTANTLY RE-CHECKED for correctness, then inserted in the text.

2) The word is correct, leave it as it is.

3) Tell HEXSPELL to LEARN this word for future reference, with just one keystroke.

Hexspell requires just one step to check and correct a text, and learn new words. Your document is ready to print as soon as Hexspell is finished. A word that is an error e.g. mistake is highlighted in the text for easy correction.

HEXCON - HEXAGON CONTROL FILE EDITOR

SET HEXSPELL OPTIONS

A) Work File Name = DOCD11

B) Input File Name = TEST

C) Next Program Name = NONE

D) Alternate Char. Set = 0

E) Extended Word List = N

F) Auto Learn On = N

G) Wait For SPELL disk = N

Press appropriate key to change an option.

Press (X) to exit edit.

HEXSPELL 2.3

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 2.3 is compatible with all word processing system of which we are aware, including Scripsit, AJEDIT, Electric Pencil and Worp 9.

Essentially, the program goes through any file produced by a word processor and checks each word against a self-contained dictionary. In the case of HEXSPELL, this dictionary consists of about 25,000 words in store on disk and another 6,000 words continuously held in the computer memory for fast access. An excellent feature of HEXSPELL is that the most commonly used words are continually "shifted" 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 than 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. In this mode, HEXSPELL has the capacity to learn up to 22,000 additional words, for instance all your company product codes, or a library of organic chemicals and their formulae. Another alternative is to instruct HEXSPELL to build a completely new dictionary, this it will do automatically as it scrolls through the text. Model 3 users should be aware that as their computer has an alternative character set, HEXSPELL can be instructed to learn Greek (very useful if your subject is mathematics or engineering) or Japanese. As far as we are aware, HEXSPELL is the only spelling dictionary available with this powerful feature.

As the text is checked for spelling errors, each line is scrolled from the bottom of the screen upwards at a fast reading rate. 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 which follow the word in question. This is important as it gives the context the the phrase which sometimes has an actual bearing on the actual spelling of the word. The user may 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. To avoid any possible errors when new words are added to the list, HEXSPELL can be made to print out each word as it is added to the the dictionary. Effectively, these words can be checked at the end of the session, and the dictionary corrected if necessary.

One of the concerns with this type of program is that small differences in American and English spelling. With HEXSPELL this is not a difficulty, partly because HEXSPELL was written by a Canadian and partly because words can be deleted from the dictionary and new words added. For our customers who are uncertain about purchasing HEXSPELL, the author has supplied us with a special demonstration disk. The demonstration together with the operating manual can be purchased separately, the cost being deducted from the final purchase price. Customers with an earlier version of HEXSPELL may upgrade to 2.3 at a cost of \$30.00 .

To overcome the complexities of different Disk Operating Systems, HEXSPELL 2.3 can be instructed to operate under either TRSDOS, LDOS, NEWDOS 2.0, or DOSPLUS. HEXSPELL requires an environment of 48k and two disk drives.

Memory Requirement 48k
TRS-80 Disk(2) Model 1 & 3
SYSTEM 80 Disk(2) Mark I & II

Hexspell 2.3 49-1506
Hexspell Demo 49-1507

AJEDIT

A SIMPLE TO USE, MODERATELY PRICED WORD PROCESSOR

There are a number of word processors on the market which have been written for the TRS-80 and SYSTEM 80 and most of them are extremely good - why, therefore another? The answer is that a lot of people require, do not need, or for that matter want a word processor program which requires a degree of training before its full features can be realised. Scripsit, for instance, is an excellent program, but it is complex to use. Our experience is that this has tended to be detrimental to the realisation of what would otherwise be an excellent program.

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. The result is a system of commands which is based around their syntax, secondly, the Edit command of AJEDIT very closely follows the Basic commands in the Basic interpreter, command with which many people are already familiar. Thus, the command to insert is "I", to delete is "D", and to take out three letters is "3D" and so on.

Before we go into summarising the various features, it should be mentioned that AJEDIT is written entirely in machine code. Furthermore, it has a feature not normally included in word processors, that is the ability to perform a Mail/Merge. What this amounts to is that the user can with little difficulty send out personalised letters and forms. Some of AJEDIT's outstanding features are as follows:

1. Cursor scrolling using the arrow keys
2. Cursor to beginning of file
3. Cursor to end of file
4. Display the first sixteen lines of text, then repeat
5. Insertion and deletion of lines
6. Insertion and deletion of characters
7. Overtyping
8. Kill to the right of the cursor
9. Search for a character string
10. Complete word wraparound
11. Screen justification - selectable
12. Place text in buffer - recall
13. Block moves
14. Chaining of text segments
15. Printer "hangs" eliminated
16. TRS-80 lower case support
17. System calls within the program - access FREE space map, DIR, printer controls etc.
18. Tab and indent settings
19. Fast screen refresh
20. Customised commands for Epson and Centronics 737 printers
21. Set current page number
22. Select line number of the page to be printed
23. Set the page length
24. Set the form length
25. Ability to use headers and footers
26. Set the number of characters to be printed on a line
27. Single page printing
28. Right justification supported (selectable)
29. Pause in printing, continue or terminate
30. Simultaneous display of text as it is being printed (selectable)
31. Centering of text on the line
32. Embedding of command codes in the text, i.e. select BOLD or ELONGATED
33. Printer control configuration - carriage return on/off, line feed on/off
34. Keyboard lock or normal typewriter mode
35. Automatic page numbering
36. Mail merge facility and labeller

As can be seen, this is a comprehensive word processor program. Retailing at less than \$100.00 we believe it offers excellent value for money. Some of the more sophisticated features of Scripsit are not present, but then AJEDIT includes a number of almost essential features which Scripsit for some unknown reason omitted. In particular, the ability to get to DOS and the ability to access control keys on the printer.

The documentation we supply is in two sections: notably a 40 page manual for the user who is unfamiliar with word processing, and a second section covering some 21 pages for the more advanced user who has already grasped the fundamentals of word processing.

Memory Requirement 32k
TRS-80 Disk Model 1 & 3
SYSTEM 80 Disk Mark I & II

11-1501

An
innovative
word
processing
system
for
TRS-80*
MOD I
&
MOD III



an innovative word processing system

LAZY WRITER OVERVIEW For The Serious User

Lazy Writer is a machine language word processing program for the TRS-80 Model I and Model III. Since its introduction in 1980, copies of Lazy Writer have found their way all over the world. Lazy Writer is helping engineers in Singapore, editors in Japan, lawyers in Switzerland, medical researchers in Australia; and thousands of businesspeople in the United States work more efficiently. It could be helping you too. Word processing means you enter text from your keyboard, make changes to it on the screen, store it on disk, and print it out whenever you want. To use Lazy Writer, you need 32K of memory, at least one disk drive, and a printer. You use Lazy Writer with a Disk Operating System (DOS), either TRSDOS or any of the popular DOS's sold for use with a TRS-80.

Lazy Writer is probably the easiest word processor to use of any on the market. Our users and reviewers have consistently mentioned how easy this program is to learn. Lazy Writer has two modes of operation: Text Entry and Editing. Once you have entered and edited your text, a simple command loads the printer module and you're ready for hard copy.

In Text Entry, you enter new material. When you switch to Edit (by simply pressing "BREAK"), you do not need to press control keys. Most editing functions are carried out with only one key stroke, and are easy to remember ("d" key for deleting, for example). Scrolling the text is very easy. In addition to moving the cursor with the arrows, you can print the next "screen" of text, add a line at the top or bottom, go to top of text or to bottom of text. You can also move to parts of your text with the "Find" function, by typing in a chapter name, for example.

The following are some of the editing functions you get with Lazy Writer:

SET TABS – You can set tabs wherever you want, then type in new material in tabbed columns. You can also make permanent tab settings via the CHANGELW extension.

OVERLYTYPING – If you've typed a word incorrectly and want to replace a wrong character, you can press "o", then move the cursor to the ending character and simply overtype the right character.

INSERT – Lazy Writer has an unlimited insert; add a letter, a word, a sentence, a paragraph, or as much text as your memory can hold. You have your choice of "closed" insert for small amounts (text moves back as you add characters), or "open" insert for bigger quantities of text (old text moves down to the last line on the screen). You can even abort what you inserted if you change your mind; just press "BREAK".

DELETE – You can delete material by character, word, sentence, or paragraph. The deleted material is held in a buffer, so you can abort the delete if you change your mind. There's also a block delete for getting rid of large amounts of text, a command for deleting from the cursor, and a search delete. There are also special commands for deleting hyphens and underlining.

FIND – You can find any word or phrase in your text by typing it in after a prompt and pressing "ENTER"; pressing "f" finds subsequent occurrences of the word. You can also replace the word or phrase with another. Lazy Writer gives you the option of replacing or not replacing the find word, or you may elect a global replace. Another feature lets you find a word regardless of whether it's upper or lower case.

BLOCK MOVES – You can move any part of your text to any other location. You simply mark the material to be moved, place the cursor where you want it to be and hit the "b" key, then "ENTER". You can even name blocks, if you want, and move them by name. This is useful if you have a lot of material marked for moves or if you use a lot of standard paragraphs, as is common in legal work. You can save blocks already marked and named on disk for future use. There's no restriction on the amount or format of material to be moved except the limits of your memory.

CASE CHANGE – Lazy Writer allows you to instantly change case on any letter. Just move the cursor to the letter you want changed, and hit the "c" key. If the letter was upper case, it'll be changed to lower and vice versa. If you have an upper case only machine, Lazy Writer has a feature to display your upper case letters by replacing them with "#". You can also simulate an upper case only machine, if you have the lower case conversion. There is even an autocap feature – all first letters of sentences and free-standing "I's will be capitalized with one key stroke.

COLUMN DISPLAY – You can see your text displayed on screen in any column width. If you are using a width wider than the screen width, the text "wraps around". Lazy Writer will tell you the last place you can hyphenate and let you insert the hyphen before that point, if you wish. These hyphens can later be removed with one command, but regular hyphens – those you find in words like "well-meaning" – will not be removed.

MULTI-FUNCTION COMMAND – Lazy Writer lets you program ten keys (the number keys) with any specific command sequence you may want. You could, for example, use this to insert printer commands in text or to put a letterhead or closing on letters. You can even program a command key to load something from disk; this feature can be tailored to YOUR needs and YOUR problems. Once you've made up some useful commands, you can save them to disk for use over and over.

REMEMBER CURSOR – You can store any cursor position, then Lazy Writer “remembers” this position and returns to it when you press the “m” key. This feature works no matter where in text you currently have the cursor. It is especially helpful in getting back to what text you want to move via the block move feature. You can locate where you want material moved to, then press “m” to get back to the block you want moved.

MANDATORY SPACE – With this feature, you can type “spaces” that will be treated as characters. This means you can type a name, like “Dr. John Smith” and be sure that name won’t be broken when printed. This lets you control where justification will break lines.

HELP FILE – This file comes with Lazy Writer and provides information on the major editing features; you can display it anytime you forget how something works. You can also edit this file or add to it to include whatever information you want it to contain.

File Management Is Easy With Lazy Writer

Press “s” to save a file; you get a prompt asking for the file name. Lazy Writer “remembers” the last name you loaded or saved, so if there’s no change, you don’t even have to type in the name again. Loading works the same, only press “l”. You can also append one file to another, or list a file to screen, without it going into memory. You can go to DOS anytime and not lose your text.

If you simply want to see your directory, you can do this without going to DOS. Lazy Writer comes with an extension program that shows you your current directory for each drive and a menu that lets you load a file, save a file, kill a file, or verify that a file in memory is the same as one on disk. You can make a catalogue of your directories with this extension. It also tells how much free space is left on your disk.

Lazy Writer Gives You Free Extension Programs – You Can Write Your Own Too!

“DIR” is the extension program described above that allows you to see your directory and load other extensions.

“RESCUE” recovers “lost” files from the computer’s memory

“SIZE” lets you control where memory ends

“STRIP” removes “soft” hyphens, underlining, block move markers, and control characters from your text

“PRINTGEN” lets you set your printer driver to the requirements of your printer. It also lets you customize your driver to use special modes of your printer, such as double-wide type.

“CHANGELW” lets you alter many of the default values in Lazy Writer. These include changing cursor size and speed, as well as printer defaults, such as page length and width. You can also set permanent tab settings, choose whether to have text print to the screen as it is loading, or load in a bit faster, without the print to screen.

“FORMATTER” lets you see page breaks before printing your text. This is very useful in controlling the final appearance of long documents.

There will be other extensions available in the future.

PRINTING YOUR TEXT WITH LAZY WRITER

Lazy Writer comes with three printer drivers, one for parallel printers, one for the TRS-232 board from Small Systems Software, and one to run from Radio Shack’s RS-232 board.

The PRINTGEN extension is easy to use and lets you set any special parameters for your printer. You only need to run this once, then your driver is set for your printer.

Lazy Writer works with just about any printer. You can provide instructions to the printer with either commands in text, or from a Printer Menu. The text commands can include decimal numbers sent to the printer as codes to control special capabilities of printers. For example, you can get compressed characters on your MX-80 or Centronics 737 by simply entering a code in text. Lazy Writer offers full support for the MX-80 and the Centronics 739.

Intelligent printers like the Qume or Spinwriter can also be controlled with text commands, which means you can spread out the type, make lines close together, make superscripts or subscripts and exercise control over your printer’s special features.

The following are some of the effects you can get with Lazy Writer:

PROPORTIONAL SPACING – Special printer programs are available with Lazy Writer for a number of popular printers capable of proportional spacing. You get full support for the Centronics 737/739, the Radio Shack Daisy Wheel II, the Qume Sprint 5, with others available soon. Lazy Writer proportional spacing lets you use all other printer commands, including underlining and bold face, with automatic justification. These are available at the buyers option at extra cost.

UNDERLINING – We give you a number of ways to do it, so just about any printer can underline. Underlining is a simple editing command. Place the cursor where you want the underlining to begin and press the “u” key; the cursor will move through the text. You can also underline empty spaces to create forms.

BOLD FACE – If your printer can backspace or do carriage returns without line feeds, you can make bold face with Lazy Writer. Just underline what you want bold face and insert a printer command (“>bold4” will do four strikes) to get bold instead of underlined words. You can even do both bold face and underlining in the same paragraph by putting the printer command right in the middle of the text. With some printers, you can get underlined bold face.

INDENTS – Indent any number of spaces you want with a simple text command to the printer. (“>indent 8” gives you an indent of eight characters.)

REVERSE (HANGING) INDENTS – This makes an indent beginning with the second line of a paragraph. This is handy for making headings or numbers in the margin. This is accomplished with a simple printer command and the manual provides a page of examples.

OFFSET MARGIN – This is for printed matter that will go in a binder and should be offset on the page. You can even offset only every other page for material that will be printed on both sides of the paper.

TITLE CENTERING – Center titles over text of any width.

TEXT CENTERING – Center text on paper of any size, in any text width.

FULL MARGIN CONTROL FROM TEXT – Lazy Writer provides a variety of margin commands that let you have left and right margins of any size, as well as vertical centering. Most of these can also be set from a menu, if you prefer. You control the final appearance of your material.

SOFTWARE FORM FEED – Some printers require form feeds be done in software. Lazy Writer lets you set the number of lines from the top of one page to the top of the next page to create form feeds. This feature lets you print on shipping labels or forms that are shorter than regular paper. You can also customize your printer driver to use software form feeds as default value via the PRINTGEN extension program.

DOUBLE-SPACING – You can double-space (or triple space or whatever) from the menu or in text commands. This means you can double-space just part of your text, if you want, or print a double-spaced version with a menu command as your proof-reading copy, then print the final copy single-spaced.

EXPANDING YOUR LAZY WRITER SYSTEM

LAZYWRITER is THE complete text preparation system. These modules are designed to ensure that there is no word processing task that LW can't fulfil. We have several New Zealand customers using LW to write novels, some who are authoring technical manuals, business users, as well as many who use it for simple day to day correspondence.

In the course of our operations I have used Word Processors from SCRIPSIT (in its multiple forms) to WORDSTAR to MULTIMATE to WORD to LOTUS to OPEN ACCES and so far I have discovered no simpler program able to give such professional results with so much ease.

Purchasers should let us know what printer they are likely to use as we have notes on the setting up for 10 or so of the most common printers used. (Of course any printer is usable with LW and all printer commands are able to be input either as part of text or at print time.

Of the multitude of extensions included in the LW package, ones of special note include FORMATTER which allows you to see the exact formatted text before printing (ie exactly how the printed page will look ; titles centered, page breaks, indents etc).

RESCUE allow the retrieval of lost text even after a reset.

PRINTGEN sets up LW for your printing requirements.

STRIP removes file markers (eg SCRIPSIT's peculiar eof marker)

SIZE is operative at all times if required to tell you the text characteristics

CHAIN prints files in sequence.



LAZYFONT

(This page of the catalogue is being typed with an EPSON Printer, LAZYWRITER and LAZYFONT using the fonts that come free with the system)



is a LW module that allows both the

designing and using of special fonts such as the above which is the STAMP font, or

MB Font or

or your own character set.

Included with the Module is a graphics font which allows neat little drawing such as this one.



Our customer's opinion is that this is a far better program than CRAYON and as this piece of text has been written after less than 20 minutes experimenting, it is not a difficult program to operate. The manual is about 30 pages long and in my opinion this software qualifies for that much misused term "very user friendly"

LAZYDOC

Is a LW extension allowing the preparation of standard documents with a "fill-in-the-blanks" capability. An obvious user would be a Solicitor where Boilerplate paragraphs are used over and over in different documents. Standard paragraphs may be used to replace any other with the choice able to be made at the time of preparation

This differs from

LAZYMERGE

In that LMERGE is oriented toward mail-shots where a standard letter is used with, eg, a name and address file to send any number of personalised texts.

PROPORTIONAL SPACE DRIVERS

are available for the EPSON, the DWII, the CITH Prowriters (including the Daisy wheel F-10) and for the EPSON LQ 1500 (one of which MOLYMERX has for sale if you want the best there is)

LAZYSTUFF

Consists of the following LW extensions; all part of the one package. It allows easier use of LW in specific situations and is an extremely useful although not essential adjunct to LAZYWRITER.

LAZYDRAW

Is a LW module allowing Graphics to be prepared on Screen and accepted as part of a LW file for printing with an Epson or Prowriter printer

LAZYDO

Works from DOS and functions as a DO file or mini JCL allowing simple commands to take one through a Startup and Load of LW and any modules or files required with no user intervention.

LAZYTAB

Lines up decimal tabs

LAZYCALC

Any math process can be inserted and calculated from within LW. An example would be a school teacher using LW with LALC to set a maths paper. It doesn't take much imagination to see possibilities in cheque book balancing as well as reports in which numbers are necessary

ALL UPPER CASE – You can get upper case by typing in upper case (with an editing command), or with a text command to your printer (you can turn it on or off within your text), or with a menu command that will output your entire file as upper case.

JUSTIFY – With Lazy Writer, your text is automatically justified, unless you choose to print unjustified. A unique "Spread" command also lets you print text that is right justified, with a ragged left margin or spread the text to the right and left margin. When used with the mandatory space, it lets you get a variety of effects.

HEADERS AND FOOTERS, INCLUDING ODD-EVEN PLACING – Have automatic page numbering anywhere at top or bottom of each page. Begin with any number and start numbering from page two, if you want. You are not limited to less than 255 pages, as is the case with some other word processors. Print report titles or chapter headings at the top or bottom of each page. Vary the placement of page numbering on odd only (or even only) pages to create a neat look for material to be printed on both sides of paper. Using the Spread command, the page numbers automatically adjust to margins.

CHAINING – Lazy Writer lets you chain files together when printing, so you can be doing something else while three or four (or more) files print automatically. There are two ways to chain files, one suitable for one or two files and another method that lets you simply type a list of the file names you want printed. You can also do formatted saves, useful for "spooling" or printing from a DOS "print" command.

Communications

Lazy Writer comes with RS232 communications package. This is not a full terminal package, but it lets you use your modem to send or receive text over your phone lines. With Lazy Writer, you can receive and save data from a mainframe computer or a service like Micronet, The Source, or Compuserve. This data can be appended to an existing file or become a new file. Send your text by modem to a colleague without leaving your desk. Writers and researchers will find this feature a big plus. Upgrades are planned to make communications even better.

A Readable Manual

The Lazy Writer manual has over 100 pages and is written in plain English, like this overview. We do not assume you are an expert word processor; we help you become one. You do not need to listen to cassettes or take classes to learn to use Lazy Writer. Our users tell us Lazy Writer is much easier to learn than Scripsit or other programs on the market. The manual has a table of contents, index, and Reference Card. Here is what the July 1981 issue of Creative Computing said about the manual: "All the functions of Lazy Writer are covered well in its documentation, which ranks among the best I have seen. It is on a par with the construction manuals for Heathkits and Dynakits." Since that article, the manual has been made even better.

You will also receive newsletters to keep you up to date on any new versions of the program, extensions for it, and tips on how to make use of the many features of Lazy Writer. Updates involving any fixes to the program will be provided at nominal cost.

Here Are Quotes From Letters From Lazy Writer Users:

"In all the purchases I have made in a lifetime of trying something new, this is the best buy I have made."

"The more I read the manual and the more I use the program, the more I am amazed at the things it can do."

"I am most impressed with the program and even though I have been using Electric Pencil for 2 years, I am changing over to Lazy Writer full time."

"I have fallen completely, madly in love with it. It is so good that I may not sell my TRS-80 . . ."

"I feel it will meet, and possibly exceed, all my needs. I am very impressed."

"I love the system and find something new practically every time I use it."

"I believe your product Lazy Writer is the finest word processor for the TRS-80 available. I reviewed the others first hand and found Pencil to be lacking in features and Scripsit too difficult to use."

". . . you have done a fabulous job."

"I am a constant user of your impressive word processor. It works well and adds considerably to the value of my home computer . . ."

"Lazy Writer is an amazing word processor. The amount of things I have been able to do with it have made its versatility stand out. I do not even use Scripsit at all now."

"I'm writing this letter to let you know how impressed I am with your Lazy Writer word processor. I have only used it a short time, but I feel it is easy to use and feature-wise compares very favorably with the editors I work with on large mini-computers."

"I have Scripsit for the Model III and I must admit that Lazy Writer is superior and easy to use."

"You have a very nice program."

"I use your Lazy Writer word processor daily and am completely delighted with its product (on my Epson MX-80) and its ease of operation."

"I have just purchased your Lazy Writer program and am very impressed. I have been attempting to use Scripsit for some time and find it very constraining. I look forward to using Lazy Writer extensively."

"Although I have only bought Lazy Writer a few days ago, I have found it extremely easy to use."

"Thank you for a great product and for your continued support of it. In both capability and support, it surely leaves Scripsit for dead."

Lazy Writer® Mod I and III

\$295.00

*Requires 2 Disk Drives to convert only.

Proportional Spacing Option Now Available!

For:

Daisy Wheel II Printer #1-177 Only \$75.00

Centronics 737/739/LPIV #1-178 Only \$75.00

NEW Epson MX80 with Graffrax #0-36 Only \$75.00



LAZYMERGE
LAZYDOC
LAZYFONT - MX80/CITOH
LAZYCALC
LAZYSTUFF

DETAILS

NEXT UPDATE

(or contact MOLYMERX

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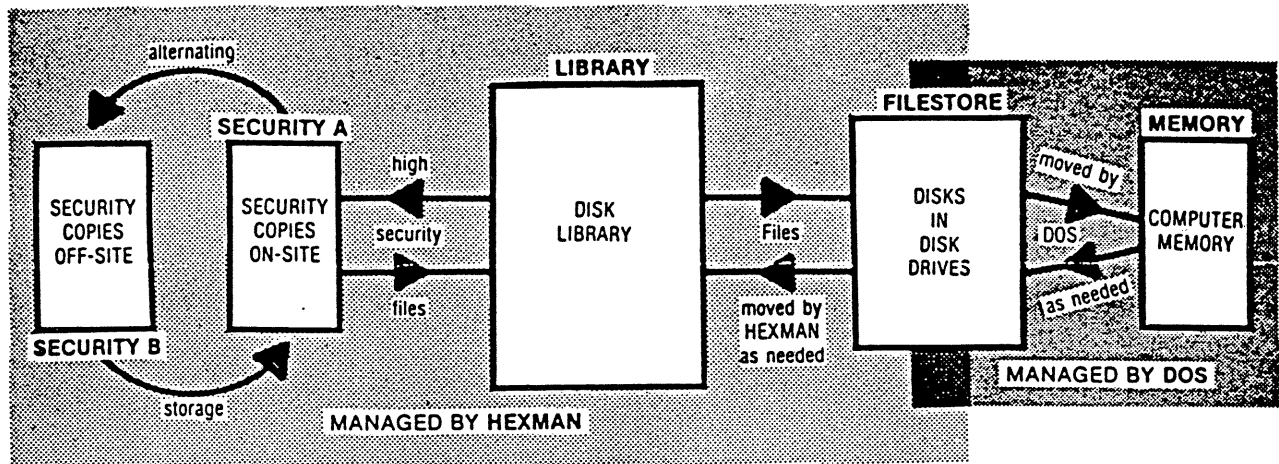
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HEXMAN D.M.S.

DISK MANAGEMENT SYSTEM

Computerized file storage and retrieval for your whole disk library.



Your Disk Operating System makes a fine job of managing the files that are in your disk drives. No need to worry about where your old files are kept or where to store new files,

your DOS takes care of it. Now HEXMAN takes over where your DOS leaves off, and extends worry free file storage and retrieval to your whole disk library.

Storage Management

Only a small portion of your disks can be in your disk drives at any one time. These disks form the "Filestore" to which your computer has immediate access, and the remaining disks form your disk "Library". Ideally the "Filestore" should contain the most active files, while inactive files are kept on "Library" disks stored near the computer.

HEXMAN comes as close to this ideal as it can by monitoring file activity and keeping the most frequently used files in the Filestore. If previously inactive files are needed, they are moved in from the Library. If the Filestore becomes full, the least active files are moved out to the Library. The net result is the files you are most likely to use are ready and waiting.

HEXMAN also performs other storage management chores such as daily backups of modified files, on-site and off-site storage of security copies, and file growth monitoring.

File Retrieval

HEXMAN manages up to 8000 files (2000 originals with up to 4 copies of each). If remembering that many eight letter file names gives you a headache — don't worry. HEXMAN gives you two easy ways to find the files you need. With HEXMAN you find files by function e.g. "Get all the files I need for the end of month Sales Reports" or by description e.g. "Find the letter I sent to Radio Shack about my disk drives". HEXMAN finds your files in seconds. Once you have found them you may Review them, Load them or Delete them as needed.

Requirements — LDOS, DOSPLUS ONLY

Model III — 48K, 2 drives.

Model I — 48K, 2 drives. Double Density adaptor. Lower case modification.

DESCRIPTIVE
BROCHURE
AVAILABLE

Introducing HEXMAN

HEXMAN is a new approach to disk library management. HEXMAN replaces the manual management of your disk library with a computerized system. A system that learns your pattern of file usage and adapts itself to match.

HEXMAN is a system for the serious TRS-80 user. If you have a large number of diskettes and a lot of data, you will be familiar with the problems of disk library management. Files that are used together have to be grouped on the same diskette. Often several copies of the same file have to be held on various diskettes. Sometimes you remove a disk with 30 files, only one of which you have been using. You replace it with another disk containing 25 files, only 2 of which you need. As disks become bigger and bigger, this becomes more and more common, and makes less and less sense.

A Better Way

HEXMAN replaces the swapping of whole disks with the swapping of single files. HEXMAN replaces the manual organization of disk contents with computer optimization of storage. HEXMAN monitors file activity, and makes sure the most active files are ready and waiting in your disk drives. As files cease to be used, they are moved out of storage to a "Library" of diskettes. If a previously inactive file is needed, it is moved in from the Library. Once HEXMAN learns your pattern of file usage and adapts your disk storage to suit, file transfers in and out of the "Filestore" (the disk drives) reach a minimum.

HEXMAN provides another important storage management service, that of backups. If you are using your TRS-80 for serious work, you will know how important backups are. You will also know what a chore it is keeping track of what was backed-up when. HEXMAN relieves you of that chore, and automatically backs-up modified files on a daily basis. Some files may be designated as "Security" files. HEXMAN makes one or two additional backups of Security files, as frequently as you feel you need them. With two Security backups, the second copy may be kept away from the computer in a safe place.

Finding Files

Anyone with a large number of computer files will know the problems of trying to find a missing file. A number of disk cataloging programs have been produced to help with this problem. Though these programs are helpful, they have several limitations. First, they tell you what you do have on a disk, but give you no help in deciding what you should have. Secondly, they only work if you use them. Once you forget to catalog your disks for a while, you're in trouble. The procrastinators of this world will recognize that this is a serious drawback. Thirdly, these systems present you with an alphabetical list of filenames. This is great so long as you are on first name terms with all your files.

If you are reaching the limits of what a disk catalog program can do for you, take a look at HEXMAN. Firstly, HEXMAN reorganises your online disks to get the right files into the right place. Secondly, HEXMAN automatically detects new files and catalogs them. New files are given a description of "Unknown". At a time that is convenient to you, you may call up these unknown files and add a full description. Thirdly, HEXMAN lets you catalog each file under a wide variety of headings. This enables you to retrieve a file by a description such as "A letter which went to Radio Shack in July". When needed, HEXMAN will retrieve a whole group of files at once. For example, you may retrieve all the files you need for monthly sales reports, with just a couple of keystrokes.

INDEX and PRICE LIST

PRODUCT	PAGE NUMBER	RETAIL	MACHINE	PRODUCT	PAGE NUMBER	RETAIL	MACHINE
AC CIRCUIT MODELLING	5.12NZ	99.00	D	ELEMENTAL MAZE	4.1	32.50	D
ACCEL (TAPE)	1.10	65.00	D	EMPEROR	9.0	36.50	D
ACCEL 4	1.10	189.95	D	ENBASE	13.3	325.00	D
ACCEL 3(DISK)	1.10	142.00	D	ENGINE DRIVER	6.5NZ	* 9.99	D
ACCEL 3(TAPE)	1.10	.38.00	D	ENHANCED BASIC (DISK)	1.3	77.50	A
ACCOUNTING TRAINER	5.13	79.95	D	ENHANCED BASIC (TAPE)	1.3	70.50	A
ADMIRAL GRAF SPEE	9.1	35.50	D	ENGIMA (DISK)	2.1NZ	57.95	D
AIRBUS (DISK)	7.6NZ	67.95	D	ENGIMA (TAPE)	2.1NZ	.9.95	D
AIRBUS (TAPE)	7.6NZ	59.95	D	EPIC 1-OCEAN HUNT (DISK)	8.7	48.50	D
AJEDIT	15.3	135.00	D	EPIC 1-OCEAN HUNT (TAPE)	8.7	41.50	D
ALIEN DEFENCE (TAPE)	6.3	* 9.99	D	EPIC 2-DUNGEONS (DISK)	8.7	48.50	D
AMATEUR LOG	5.5	44.50	D	EPIC 2-DUNGEONS (TAPE)	8.7	41.50	D
ANIMATION (DISK)	5.6	52.00	D	EPIC 3-VENUS (DISK)	8.7	48.50	D
ANIMATION (TAPE)	5.6	45.00	D	EPIC 3-VENUS (TAPE)	8.7	41.50	D
ASTERIODS (DISK)	6.1	34.50	D	ESCAPE FROM MARS	8.0	28.95	D
ASTERIODS (TAPE)	6.1	* 9.99	D	EVEREST EXPLORER (TAPE)	8.1	37.50	D
ASTRO NAVIGATOR	7.2	37.50	D	EVEREST EXPLORER (DISK)	8.1	42.50	D
ASTROBALL	7.1	* 9.99	D	FAIRYTALE ADVENTURE	8.2	32.50	D
ASTROLOG	5.10	31.50	A	FAMILY TREE (DISK)	5.6	56.95	D
ATERN 1.4	2.1	45.50	D	FAMILY TREE (TAPE)	5.6	49.95	D
BASE CONVERTER	1.0	21.50	D	FARMER BROWN	5.4	28.95	A
BASIC INSERT	1.8	42.95	D	FAST FOURIER TRANSFER	11.1	86.00	D
BASKETBALL	7.0	** 9.99	D	FINANCIAL ANALYSIS	14.1	147.00	D
BATTLE OF BRITAIN	9.1	42.95	D	FOREST OF MORDOR	10.0	30.50	D
BIORHYTHM	5.9	28.95	D	FORTH CASSETTE	12.1	99.00	D
B OKS				FORTRESS (TAPE)	6.3	* 9.90	D
ASSEMBLY LANQ.TOOL KIT	MAY UPDATE	75.00	D	FRENCH VOCABULARY	4.3	49.95	D
HOW TO DO IT on TRS 80	*	39.95		FRENZY (DISK)	6.4	* 19.99	D
GAMES & GRAPHICS TRS80	*	19.95		FRENZY (TAPE)	6.4	* 9.99	D
MACHINE LANQUAGE DISK I/O	*	39.95		FROGGO	6.4	* 9.99	D
BASIC DISK I/O		49.95		GAMMON CHALLENGER	5.1	34.50	D
BASIC BETTER & FASTER		49.95		GENCOP	1.0	32.50	A
CALENDER	5.5	28.50	D	GOLF	7.1	42.95	A
CATERPILLAR (TAPE)	6.3	* 9.99	D	GOMOKO	5.0	35.50	D
CHEMICAL FORMULAE	4.1	33.50	D	GRAPH PLOTTER (DISK)	11.1	56.50	D
CHEQUE BOOK	5.4	46.50	D	GRAPH PLOTTER (TAPE)	11/1	49.50	D
CITY ENCOUNTERS	8.5	42.95	D	GRAPHIT	14.2	99.50	D
CLONE	1.5	34.50	D	HAMBURI	9.1	28.95	D
COMPUT-A-ORGAN	5.4	* 9.99	D	HANNIBAL	9.0	36.50	D
COMPUTER POOLS	5.7	42.95	D	HARTFORTH	12.1	199.00	D
CONCORDE	7.10	49.95	D	HEXMAN	15.4	149.95	D
CONSTELLATION	4.1	39.50	A	HEXSPELL 2.3	15.2	138.00	D
CRAYON (DISK)	1.8	65.50	D	HEXSPELL 2.3 (DEMO)	15.2	20.00	D
CRAYON (TAPE)	1.8	58.50	D	HONEST JOE	5.7	35.50	D
CRAYON DELUXE-FONTMAKER	1.18NZ	138.50	D	HORACE	5.8	35.50	D
CROSS REFERENCE	1.17	28.95	A	HOROLOG	5.10	42.95	D
CRITICAL PATH ANALYSIS	14.5	** .99.00		IMAGE PROCESSING KIT	5.12NZ	62.50	A
CRUSADERS	9.1	36.50	D	IMON	1.16	77.50	A
CUBE HUNT	8.1	32.50	A	IMPAKT (DISK)	1.12	98.50	D
DARTS	7.0	28.95	D	IMPAKT (TAPE)	1.12	91.50	D
DATA BASE MANAGEMENT (DISK)	13.2	98.50	A	INDEX	13.2	42.95	D
DATA BASE MANAGEMENT (TAPE)	13.2	91.50	A	INSIDE TRACK (DISK)	7.8NZ	47.50	D
DEFEND (DISK)	6.2	* 19.99	D	INSIDE TRACK (TAPE)	7.8NZ	39.50	D
DEFEND (TAPE)	6.2	* 9.99	D	INSTANT ASSEMBLER 2.1 (DISK)	1.18NZ	107.95	D
DELTA TAU ONE	6.4NZ	24.95	D	INSTANT ASSEMBLER 2.1 (TAPE)	1.18NZ	99.95	D
DEMON (DISK)	1.18NZ	67.95	D	INSTANT SORT SEARCH (DISK)	13.1	77.50	D
DEMON (TAPE)	1.18NZ	59.95	D	INSTANT SORT SEARCH (TAPE)	13.1	70.50	D
DERELICT	8.1	28.95	D	INTERDICTOR PILOT	6.6	49.95	D
DERELICT 80C	8.1	28.95	I	INVADERS FROM SPACE	6.0	* 9.99	D
DESCRIPTIVE STATISTICS	11.0	46.95	D	JUMBO (DISK)	7.3	68.95	D
DIFFERENTIAL EQUATIONS	11.1	46.95	D	JUMBO (TAPE)	7.3	61.95	D
DIRECTION FINDER	4.1	42.95	D	KEYBOARD MASK	1.14	35.95	D
DISK AID	1.17	50.50	A	KING ARTHUR	9.0	35.50	D
DISK INDEX	1.15	52.95	D	KNIGHT DELUXE	5.0	35.50	A
DOMINOES	5.0	* 9.99	A	KUBIK	5.1	28.95	D
DOSPLUS 3/5 (MODEL 3)	3.2NZ	** 165.95	C	LABELLER	1.14	27.50	A
DOSPLUS 3.5 (MODEL 1)	3.2NZ	** 165.95	D	LABYRYNTH	10.0	35.50	D
DOSPLUS 4.0 (MODEL 4)	3.2	** 199.95	C	LANGUAGE TEACHER (FRENCH)	4.3	49.95	D
DRAUGHTS	5.1	* 9.99	D	LANGUAGE TEACHER (GERMAN I)	4.3	49.95	D
DREAMWORLD	8.2	32.50	D	LANGUAGE TEACHER (GERMAN II)	4.3	49.95	D
DRIVER	7.1	* 9.99	D	LANGUAGE TEACHER (ITALIAN)	4.3	49.95	D
DUEL-N-DROIDS	6.1	* 9.99	D	LANGUAGE TEACHER (SPANISH)	4.3	49.95	D
DUEL-WESTERN STYLE	6.5NZ	* 9.99	D	HOSPITAL HOMICIDE	7.9	** 49.95	D
EDIT (DISK)	1.11	89.60	D	JOB COSTING	14.3	** 199.95	D
EDIT	1.11	61.50	D	LAZYWRITER	15.3	** 285.00	D
EDJUST	1.4	49.50	A	LAZYWRITER EXTENSIONS	15.5	** 85.00	D

PRODUCT	PAGE NUMBER	RETAIL	MACHINE	PRODUCT	PAGE NUMBER	RETAIL	MACHINE
LDOS (MODEL 1)	3.0	* 215.00	A	SEAWOLF	6.2	* 9.99	D
LDOS (MODEL III)	3.0	* 215.00	C	SERPENT	6.2	* 9.99	D
LOAN	5.4	31.50	D	SHARE ANALYSIS	5.3	63.95	D
LOST COLONY (DISK)	7.2	44.50	D	SHARE PORTFOLIO	5.3	63.95	D
LOST COLONY (TAPE)	7.2	37.50	D	SHEEPDOG	6.4	* 9.99	D
LUNAR LANDER	7.2	18.50	D	SHUTTLE II (DISK)	7.1	49.95	D
MA ADVICE SHEET	8.3	1.00		SHUTTLE II (TAPE)	7.1	42.95	D
MA 1-THE GOLDEN BATON (DISK)	8.3	48.50	D	SIR	13.5NZ	156.00	D
MA 1-THE GOLDEN BATON (TAPE)	8.3	41.50	D	SKYSWEEP (TAPE)	6.3	* 9.99	D
MA 2-THE TIME MACHINE (DISK)	8.3	48.50	D	SLOT MACHINE	5.7	28.95	D
MA 2-THE TIME MACHINE (TAPE)	8.3	41.50	D	smallDOS	3.4NZ	165.00	A
MA 3-ARROW OF DEATH I (DISK)	8.4	48.50	D	SMART TERMINAL (DISK)	2.0	95.50	D
MA 3-ARROW OF DEATH I (TAPE)	8.4	41.50	D	SMART TERMINAL (TAPE)	2.0	87.50	D
MA 4-ARROW OF DEATH 2 (DISK)	8.4	54.50	D	SOUND	1.15	32.50	A
MA 4-ARROW OF DEATH 2 (TAPE)	8.4	46.50	D	SPACE EYE (DISK)	6.1	39.50	D
MA 5-FEASIBILITY EXP (DISK)	8.5	54.50	D	SPACE EYE (TAPE)	6.1	32.50	D
MA 5 ESC. FROM PULSAR 7(DISK)	8.4	54.50	D	SPACE FIGHTER 80 C	6.0	28.95	I
MA 5 ESC. FROM PULSAR 7(TAPE)	8.4	46.50	D	SPEEDY	1.7	* 9.99	A
MA 6-CIRCUS(TAPE)	8.5	46.50	D	STAR FIRE	6.0	* 9.99	D
MA 7-FEASIBILITY EXP (TAPE)	8.5	46.50	D	STEP 80	1.4	35.95	D
MA 8 PERSEUS & ANDROMEDA DISK	8.5NZ	48.50	D	STOCK MARKET	4.1	36.50	D
MA 8 PERSEUS & ANDROMEDA TAPE	8.5NZ	41.50	D	STOPPER	1.18	79.95	D
MA 9-WIZARD OF AKYZ (DISK)	8.5NZ	48.50	D	STRUCTURED BASIC TRANSLATOR	1.7	84.95	D
MA 9-WIZARD OF AKYZ (TAPE)	8.5NZ	42.50	D	SUPRA TREK	6.1	42.95	A
MA 10 TEN LITTLE INDIANS DISK	8.5NZ	48.50	D	SYDUMP	1.5	35.50	A
MA 10 TEN LITTLE INDIANS TAPE	8.5NZ	41.50	D	SYSTEM DIAGNOSTIC (DISK 1)	1.17	199.00	
MACHINE CODE TO BASIC	1.4	36.50	A	SYSTEM DIAGNOSTIC (DISK 3)	1.17	199.00	
MARQUEE	5.5	42.95	D	SYSTEM DIAGNOSTIC (TAPE 1)	1.17	189.50	A
MATHS SPEED TEST	4.2	35.50	D	SYSTEM DIAGNOSTIC (TAPE 3)	1.17	189.50	C
MATRIX MANIPULATOR (DISK)	11.1	98.50	D	SYSTEM II-DEMO	14.3NZ	49.95	C
MATRIX MANIPULATOR (TAPE)	11.1	91.50	D	SYSTEM II	14.3NZ	1199.00	C
MILES PER GALLON	5.2	56.50	D	SYSTEM SAVERS	1.7	36.50	D
MINEFIELD	10.0	* 9.99	D	TABLES	4.2	35.50	D
MINI UTIL 1,2,3	1.17NZ	22.50	D	TANDYWRITER	14.1	420.00	C
MODEM 80	2.2	** 149.95	E	TAROT	5.9	36.50	D
MONEY MANAGER	5.3	79.95	D	TECOM	2.2	69.95	D
MONITOR 3 (TAPE)	1.14	70.95	D	TELCOM 2	2.2	129.90	D
MONITOR 4 (DISK)	1/14	98/95	D	TENPINS	7.0	* 9.99	D
MONITOR 4 (TAPE)	1.14	91.95	D	TEXPRO (MODEL 1)	15.1	63.95	A
MORSE CODE	5.5	35.50	A	TEXPRO (MODEL 3)	15.1	63.95	C
MORSE CODE COMMUNICATOR	5.5	46.50	A	THE INSIDE TRACK (DISK)	7.8NZ	47.50	D
MULTIPLE CHOICE QUESTIONS	4.3	63.95	D	THE INSIDE TRACK (TAPE)	7.8NZ	39.50	D
MUSIC MAGIC	5.4	49.50	D	TIME RECORDING SYSTEM	14.0	1140.0	C
MZAL (MODEL 1)	1.2	210.00	A	TOUCH TYPING COURSE (DISK)	4.2	182.50	A
MZAL (MODEL 3)	1.2	210.00	C	TOUCH TYPING COURSE (TAPE)	4.2	174.50	A
NAPOLEON	9.1.	36.50	D	TRACKER	1.1	63.95	A
OBJECT CODE RELOCATOR	1.0	6.50	D	TRACKESS (MOD. 1)	1.18	79.95	A
OUTHOUSE (TAPE)	6.3	* 9.99	D	TRACKESS (MOD. 3)	1.18	79.95	C
PACK/UNPACK	1.15	91.50	A	TREASURE TROVE	8.0	33.50	D
PAGE FILE	13.0	64.95	D	TRIUMPH OF ROME	9.0	32.95	D
PARAFORM	1.9	49.95	D	TSAVE	1.9	18.50	A
PASCAL 6.2 (N.B. UPDATE)	12.0	248.00	D	UNDERWORLD-DISK	7.5NZ	33.50	
PELMANISM	5.0	31.50	D	UNDERWORLD-TAPE	7.5NZ	24.50	
PILOT	4.0	46.50	A	VISION DOAD	1.9	37.00	
PINBALL	7.0	* 9.99	D	WONDERLAND ADVENTURE	8.2	32.50	D
PLANT SELECTOR	5.11	140.50	D	WUMPUS	8.1	18.50	D
PROBE	5.10	56.25	D	YI-CHING	5.9	35.50	D
PROTEXT	13.0	119.50	A				
PROZAP	1.5	79.95	D				
PYRAMID	8.0	28.95	D				
QUASH	1.21	99.00	D				
QUEST	8.0	28.95	D				
QUIKPRO+PLUS (MODEL 1)	1.6	** 99.00	A				
QUIKPRO+PLUS (MODEL 3)	1.6	** 99.00	C				
RACE	5.8	32.25	D				
RACING DRIVER	7.1	* 9.99	I				
RAM SPOOLER	1.9	35.50	D				
RAM TEST	1.11	28.95	D				
RANDOM DUNGEON GENERATOR	8.5	46.50	D				
RENUMBER BASIC	1.7	32.50	A				
RESQ 2	1.15	36.50	D				
ROULETTE	7.5NZ	24.50	D				
S B E	1.22	** 199.00	D				
S.I.R	13.5NZ	156.00	D				
SAM LLOYD	5.2	31.95	D				
SCRIPTR	15.0	84.00	D				

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We prefer that software be submitted on disk with the documentation typed double space. We evaluate all our software submissions against seven criteria:

1. Originality.
2. User friendliness - Is the program easy and convenient to use?
3. Program polish - Is the program well structured, clean and bug free?
4. External documentation - Well-written and complete?
5. Special features - Graphics, sound and colour used effectively.
6. Multiple levels - Required in both games and educational packages.
7. Marketability - Is there a demand for such software?

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Acknowledgements:

We would like to thank John Harding for his substantive help in compiling this catalogue and the Boeing Corporation for their photo of a 747