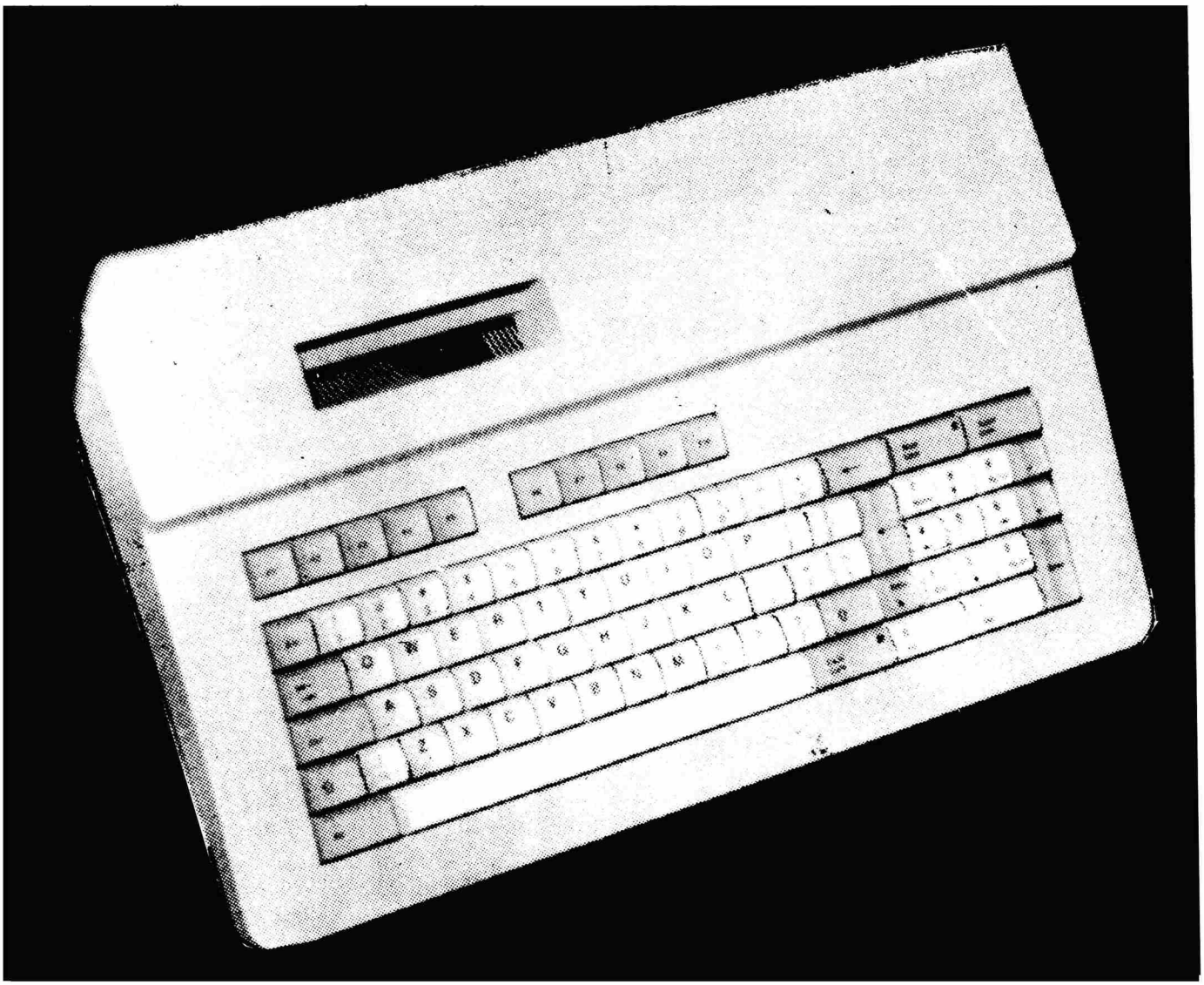
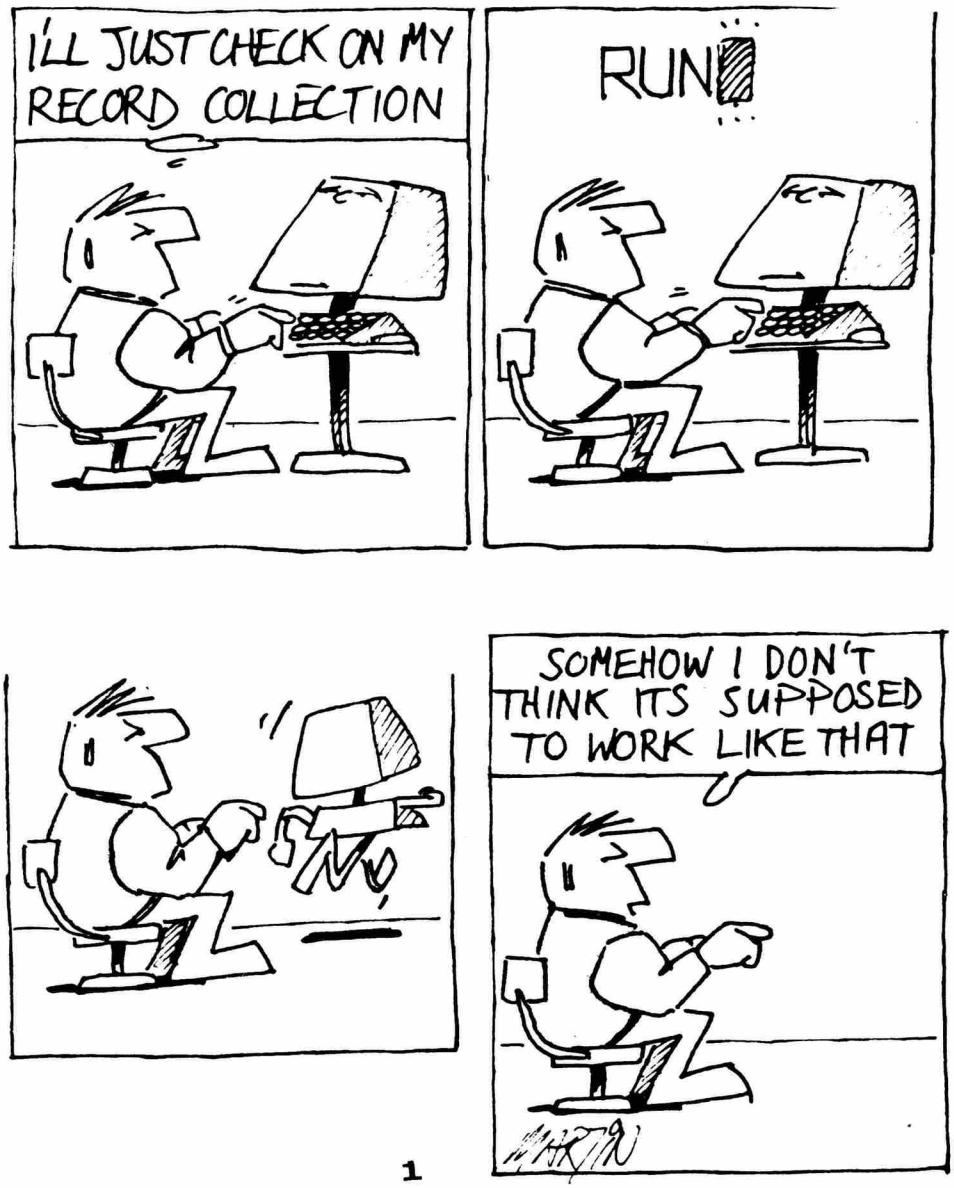
TI*MES



Myarc's 256K TI computer

INDEX.



Welcome _____ to TI99/4a EXCHANGE

TI*MES TI*MES TI*MES TI*MES TI*MES TI*MES TI*MES TI*MES TI*MES TI*MES
WINTER ISSUE NUMBER ELEVEN

40,Barrhill,Patcham,BRIGHTON,East Sussex,BN18UF.Tel:0273 503968(evenings)

1986 BRINGS A NEW DAWN FOR TI

Many thanks to all TI Users who made it through the fog to our 3rd show in Birmingham. We learn a little each time and hope to improve each event. This time we were able to provide more demonstrations thanks to our friends from Leeds, Oxon TI Users and the West Midland group. Not to forget Micronet for their support especially when an increasing number of members have modems as you will see by a later article. The auction took over the afternoon and provided some entertainment, some bargains and some cash. Thank you every one who helped. Special thanks to Howard Arcade and Francis Parco who both helped sponsor the event. Please come again.

1986 SHOWS
Note in your diary a similar event in the Spring, could be Leeds but so far have been unable to find a suitable meeting place. If YOU have any ideas please contact us.

We are joining ACC at the next PERSONAL COMPUTER WORLD SHOW held at Olympia during September. Anyone able to help man, or woman the stand would be welcomed. The dates for the event will be published next issue of TI*MES.

NEW TI99-COMPATIBLE COMPUTER is the big news for 1986, we feature this in our cover story.

WE'RE NEARLY FAMOUS.
Our group has been featured in November's MICROpendium, January's PERSONAL COMPUTER WORLD and MICROMART (with thanks to A.C.C. Rupert Steel and John Bone). We still get calls from people who have only just heard about us after 3 years. If you know someone with a TI, tell them about us.

ADVENTUROUS?
News from the States that there are 4 new Scott-Adams adventures for the TI module including Hulk and Spiderman. At $20 each will they make it here? The user Group has an Adventure Hint book so if you're really stuck send 2x 17p stamps for help.

PRINTER OFFER.
You will notice in this issue an ad. for printers. Some computer publications have been carrying a £20 off coupon which allows TI*MES readers to buy a dot-matrix printer for £177. An offer you can't refuse? Hurry, harry, hurry while stocks last!

CREDITS.
Thanks again to all our contributers who have made this newsletter into a magazine read all over the World. We badly need articles on BASIC. Can anyone help? Thanks too to Richard Hammond for your recent help. You're a real honey. Well, keep supporting us and we'll keep on supporting you thro' 1986. HAPPY NEW YEAR.

Audrey.

AUDREY SCALLY

MANCHESTER MUSINGS

by John Rice

IMPORTING FROM THE USA

Quite a few people have asked me what it costs to import items directly from the USA. At the risk of upsetting our UK suppliers, who do an excellent and necessary job in keeping the supply of hardware and software for the TI99 flowing, here's the breakdown of what my last US purchase cost me. The order was placed by phone on TexComp's answering machine, and the costs were:

Telephone call to USA:			£5.00
OSCAR bar code reader:	$9.95		
OSCAR program library disk:	$12.95		
Weight Control and Nutrition Module:	$10.95		
LOGO II:	$19.95		
Shipping and handling:	$15.00		
3% surcharge for using VISA:	$2.06		
DOLLAR TOTAL:	$70.86	- VISA bill:	£49.47
UK customs fee:			£3.21
VAT:			£9.41
Post Office customs clearance fee: *			£1.00
STERLING TOTAL:			£68.09

So, $53.80-worth of goods cost £68.09, which works out at an exchange rate of about 79 cents to the pound. Add to that the inconvenience of finding out current US prices (I use Micropendium), my time (not costed!), the uncertainty about whether the order is accepted, the shipping costs and the exchange rate (I was lucky this time), the delay of about six to eight weeks in the arrival of goods, and the inconvenience of having to trail round to the local Royal Mail sorting office to collect my parcel and pay the fees due - and it's evident that it's only worth it if you're buying a number of items. That's why most of us will continue to buy from Arcade and Parco as long as they remain in the TI99 business.

LOGO

Even though I've had the necessary 32K RAM expansion for some time, I've fought shy of LOGO simply because the cartridge has always been so expensive. However, TexComp's super sale price of $19.95 (which translates to £25.25) eventually clinched it! Although LOGO's not caught on over here like it has in schools in the USA, it has to be said that it really is **the** best computer language for discovering logic, graphics and programming. LOGO fanatics see "the hope of tomorrow - young people riding into the future on the back of a Turtle"! Which brings me to discovery of the week: no sooner had LOGO arrived but my local university bookshop decided to hav a sale; and what should I find at knockdown prices but two books on LOGO. Both were published in 1983 by Reston Publishing Co Inc (a Prentice-Hall company) and written by members of the Young People's LOGO Association. One, for parents and teachers (complete with worksheets) is called "The Turtle's Sourcebook" (ISBN 0-8359-7890-7, 226 pages, £19.75 reduced to £1.00) by Donna Bearden, Kathleen Martin and James H Muller. The other, a companion volume for children, is called "1,2,3,My Computer and Me" (ISBN 0-8359-5228-2, 99 pages, £9.85 reduced to £1.00) by Donna Bearden. Both books cover LOGO for the Apple (Apple and MIT versions) and the TI99/4 and TI99/4A (LOGO I), and are written in a light-hearted style with plenty of illustrations which make them a joy to use. I assume that they've been deleted from the publisher's catalogue, so it'll be well worthwhile looking out for them.

* In 2022 the minimum Royal Mail handling fee was GBP 8.00 ! Quite a large proportion of an import costing US$20...

OSCAR THE DODO

I've got a new pet. It emits a variety of endearing squeaks and loves being handled. He's called OSCAR - Optical SCAnning Reader if you're being formal about it. You know the bar codes that appear on food containers? Well, the Databar Corporation had the brilliant idea of producing a bar-code reader which would replace a cassette player when connected to a home computer, and would replace cassettes by pages with bar codes printed on them. So they produced OSCAR which, with the correct cassette cable and a special computer-identifying first line of bar code, connects to Atari, Commodore, Tandy and TI computers. The idea was to publish a monthly magazine of bar-coded programs for each computer. Unfortunately, Databar decided to go out of the home computer business (where have I heard that before?) after only releasing about 28 programs. TexComp has bought up all the remaining stock and is offering the set of programs (all for console BASIC) on cassette or disk. If you buy this, you're them entitled to the "privilege" of buying a completely unguaranteed OSCAR (mine works - it just needs 4 batteries) complete with some of the same programs in bar-code form in a binder. Since OSCAR can't read anything else, he looks a bit of a dodo really - but if we could find out how the programs were coded, more could be produced. Mind you, it's no wonder the product wasn't successful; the programs are pretty unexciting, with minimal use made of colour and graphics.

SOFTWARE

Just a few more comments on (American) "Football" (PHM 3009). It **doesn't** use speech or joysticks and is a game which requires two players. One selects an "offensive play" and the other a "defensive play". You then sit back and watch the computer act out the consequences on the field of play, before you are asked to select your next move. It's a game in the "Hamurabi" tradition - definitely **not** arcade. Like I said before, it's most enjoyable if you want to learn about American Football.

"Physical Fitness" (PHM 3010) carries a health warning! "Consult your doctor before beginning any exercise program". The program starts by evaluating your current physical condition and then computes a "Target Training Value" for your exercise programme. You get a run down on all the exercises, performed by a litte figure on the screen. Then there are two sets of 10 exercises, one for women and one for men, each with 5 levels of difficulty. A tone sounds to keep you in time with the figure on the screen. As the booklet says: recommended for ages 13 and up - but see your doctor first if you're over 35!

"Weight Control and Nutrition" (PHM 3021) is a real bargain. It comes with an 80-page booklet which, apart from the usual explanations, contains 12 pages of nutritional information and 62 "kitchen-tested Better Homes and Gardens recipes". The program lets you keep track of up to 5 people's dietary programmes. You choose a target weight and date by which you want to achieve it and then, with the help of the computer, you put together a weekly set of menus, selected from 197 foods, which will help you reach your target weight. The program keeps track of 10 updates to your weight - so it's best used weekly over a period of up to 10 weeks. If you want to use your personal information, food selections and menus in a later session, you'll need a cassette recorder or disk system. If you have a printer, you can print any screen display, menus or personal information. The thing that puzzles me is, in a table of activities (used to determine the amount of phsical exertion you engage in), why does an American publication include cricket? Both the above modules are liberally laced with warnings about the dangers of exercise or dieting - hooray!

"Mini-Writer Version 1" on cassette for the Mini Memory Module is provided free with TexComp's MMMs. Its exact authorship is unknown - the accompanying 27-page booklet says "Copyright Model Masters", but the screen says "Copyright DataBiotics"! It's really more of a text editor than a word processor. It has no word-wrap, text replacement or line-justification facilities, but has good searching and block moving facilities - plus an UNDO command. For simple editing of short documents - letters for example - it's quite a useful program - and it only needs an MMM and printer.

The "SPECTRUM" chain of computer shops used to stock the TI99/4A in the good old days. Many of them still have odd TI modules and cassettes stored sadly in a corner - often at negotiable prices! They sometimnes take in goods in part exchange. The other week I spotted "Rabbit Trail", an enjoyable arcade game by FUNWARE (now sadly no longer in the TI business), in a very tatty box in my local micro store. "How much for this?", I asked. "Oh, it's for the obsolete TI99 - let's say £3.50". "Done!", I cried - and I wasn't! Looking back through past TI*MES I see the last time it was available new it cost £27.50. It seems, if this and the prices in the auction at the TI User Show in Birmingham are anything to go by, as though the going rate for second-hand modules is about one-eighth of their cost when new - a sobering thought - unless you're buying! Incidentally, I recently re-valued my TI system as part of my house contents insurance - it came to a lot more than I thought - make sure you're not under-insured.

COMMUNICATION

I've bought a Thorn-EMI VX543/10 modem. It supports 300 baud and 1200/75 baud full duplex operation, with an internal buffer so that the split speed mode can be used with the TI RS232 interface set to 1200 baud. It also claims to run at 1200 baud in half duplex mode. One of its attractions was that it has no switches - everything's set up by software commands sent down the RS232 interface from the TI99/4A. It **seemed** a good idea at the time, but now I'm not so sure. I've been using program B1 (modem program TEX) from the TI*MES library to successfully access computers at work and elsewhere (including Alan Davey's 4/ABC) and have used both high and low speeds where appropriate on the computer I was connected to. Its particulary useful feature is the ability to log all data received to a printer (slowly and expensively) or a disk file without data loss. I've also used TE11 successfully. I recently received FAST-TERM and TE3 from Stephen Shaw and am beginning to explore the extra features they offer. More next time - telephone bill permitting!

IN PASSING

No more heard from the TI Home Computer Users Club - the autumn 1985 issue of the Club News is still awaited - has anyone received it?

I had a pleasant surprise the other day: In the November issue of MSX Tape Computing (sorry! I've succumbed to a Toshiba HX-10 - a computer with **far** less software than the TI99!), who should I see as the author of an excellent KONG clone but our own king of the TI keyboards : Neil Lawson.

What wouldn't we give for a BASIC command P=POINT(X,Y) which gives the colour at hi-res dot (X,Y) (like on an MSX system, which uses the same display chip as the TI99/4A)? Wait no longer - Mechatronic GmbH, Dresdener Strasse 21, D-7032 Sindelfingen, West Germany have come up with Extended BASIC II Plus (reviewed in October's Micropendium; $98 in the US) with exactly such facilities. Let's hope it's available in the UK soon.

John Rice

U.K. SHOW REPORT

by Phillip Marsden.

Like other contributors before me,I seem to have fallen into the trap of starting off with a rush of enthusiasm for writing articles for the mag,and then tailing off.The first article was very long,the second was again very long,but the third was very short (and almost non-existent due to forgetting the publication date),and the fourth never arrived due to pressure of other things.I hope that I can settle down to a happy medium now,and try to build on the good work done by others.This article will be general chit-chat,and then in subsequent articles I will try to put down on paper some of the things that I have done on the hardware,and some of the things I would like to do.

First,I would like to say how much I enjoyed meeting other people at the Birmingham Show.The Show seemed to go quite well for almost all concerned (sorry to hear about the modem demo).The auction looked quite good,but I wish there had been a volume control on the public address system.I hope that the demonstration machines that my friends and I brought to the Show were of some use to others.Being our first Show,we were somewhat disorganised,but we hope to improve.

The Forth single-drive disk copy program which I had laboured on all week to look presentable refused to work on the day ! As usual it worked beautifully when the display looked a shambles.The Swedish version of Forth attracted some attention,especially from those people who want a tape version of Forth.This is being worked upon by both of my friends in Leeds,as I have passed the Forth onto them,having got tied up with the hardware,and some other things.

The Logo demo by Stan Dixon seemed to puzzle some people,but it is a simple program to write (or so Stan tells me).The Logo was running on a standalone console containing 32k ram,which most people did not seem to realise,so I eventually twigged that it was not self-explanatory,and put up a rough notice that the console was modified.I hadn't realised that not everybody knew that Logo cannot run without 32k ram.

Neil Lawson took over my machine in the afternoon,when I went to talk to some friends who had arranged to meet me there.There seemed to be great interest in the Explorer program,and having borrowed a copy,I can see that I will have to buy my own copy.It seems a shame that such good software is making an appearance almost two years AFTER the machine went out of production.

Now,onto the subject of the next Show.I have been trying,on Clive's behalf,to arrange a venue in Leeds.At the moment that I write this article,the arrangements are still under negotiation,and it may be that the spring Show may have to be held elsewhere,as Leeds is very bad for getting city-centre sites at a reasonable rate which will give us the facility of having dealers or holding an auction.

Always supposing that the Show goes on in Leeds,I would like to ask for volunteers to man the stands.I am arranging for quite a few tables on which our equipment can be placed,and the more people that are willing to demonstrate their skills,the better.No-one should be afraid to stand up and be willing to help others on the grounds that they don't know enough.It is surprising how many people know even less than yourself!

What I believe we need at the Show is a greater sense of comradeship,that we are going to meet other people with similar interests,rather than going to see what is available on the dealer stands.A group like ours stands or falls by the amount of effort that EACH of us puts into it.Should we leave all the work to just a few people,then eventually those people are going to lose interest and leave the group,and the group will eventually fold,through general apathy.If even ten offers of help are received out of the five hundred or so members,then ten more machines at the Show with various demonstrations will add much more. PLEASE offer your services.No-one needs to stand up and give a lecture in front of a crowd,just to show other people the programs which they have developed for a particular purpose of their own.This can be used to demonstrate the principles of programming with a practical end result rather than a boring book example.No-one expects anyone to be the definitive expert on the subject of hardware or programming (you would be working for TI if you were),but to absolute beginners your knowledge might be very useful.By the way,if any "definitive experts" are reading this,please come to our Shows and help us out.We're not proud,you'll be welcome.

I have been asked by someone about the possibility of a robotics interface to the 4a,but if someone has already achieved this,please show it to the rest of us at the Show,no matter how crude it is,for more likely than not,it will be the only one of its kind,and you WILL be the expert!

Finally,on the subject of the show,let's all pull together,and keep the standard of the Shows going up.Don't let us become a group of games players,our computer deserves more than that! Let's try to get a balance of the two types of users.Now,if you are a games WRITER,and want to show us how its done....

Some other points before I go.First,the Swedish Forth that I have is in the public domain,and I am willing to copy it onto disk for those with disk drives,for a fee of £1.This is to cover return postage and my time in copying the program.This applies to a Forth drawing program that I have received from Sweden.Supply me with two disks properly formatted to 40 track single side,and you can have both for £1 (the postage on two will be little more than on one disk.Don't forget to protect your disk properly,as you will get the disk back in the same packing as you sent it in).There is not much documentation with either program.If you need documentation,you will have to pay the price for the TI Forth and manual.There will hopefully be a tape version soon,for those with basic systems.Watch this space,or write.

I have found,in the worst filing system in the world,some letters which still need answering.I will do my best to clear up the backlog over the Christmas holidays,including those people who were kind enough to enquire about the memory board.The position here is that I have had some prototype pcb produced,and I am going to test them first before offering them for sale.Should they be saleable,then it will be as a bare board only,with some instructions on what components to put where and what wires to connect where.This is because most people at the show indicated that they wished to do the work themselves,rather than pay someone else to do it for them.

Bye for now,and hope you've had a good Christmas.

Phillip Marsden.

World TI Users Spotlight

Written by Danny Michael
Reprinted from SHOALS 99'ERS May 1985 issue Volume 3, Number 5

Over the past year or so, a new buzzword has been gaining popularity in the TI community. The word is FREEWARE and it's been bringing new and useful software to TI users at prices that are agreeable to everyone. But as always with new concepts, there has been confusion among some users as to the responsibilities of the user who wants to benefit from the FREEWARE marketing scheme. But first, just what is FREEWARE?

FREEWARE is a marketing technique in which a software author offers his program(s) to the public at no charge. Contrary to the usual "commercial" copyright notices that inform you that you break the law if you copy the program, FREEWARE programs actually contain a notice encouraging you to make copies of the program for your friends. Although most FREEWARE works are copyrighted, you are in effect given a license to distribute the program to others, providing that you do this for no charge. In other words, you can't sell the programs, but you can give them away to anyone. Now that you know what FREEWARE is, don't you wonder why anyone would want to spend their time devloping software just to give it away? Well, that's where some of the misconceptions are, and the thing that throws most folks off is the name itself : : : FREEware. FREE - something for nothing, right? RIGHT! WRONG! It's both right and wrong. You'll notice that I called FREEWARE a marketing technique. FREEWARE programs contain a notice that informs you that if you like the program and think it's worth paying for to send your payment to the author. It's sort of like test diriving a car before you buy it. The difference is that if you decide not to pay for the program, you don't send it back. You keep it, use it if you want, and give copies to your friends. Much like the scheme where you buy something and receive a free gift which you keep even if you send the purchased item back, except in this case, the gift is the product itself. The price you pay, if you decide to do so, depends upon the program. Some authors suggest a certain price (generally $10), others tell you to send what you think the program is worth up to a maximum limit (again, usually $10), while others do not put a limit on the amount. The main consideration is, of course, the value of the program to you. But you must also consider that the author of the program is providing his time and talent to produce software for your orphaned computer with no guarantee of any compensation for his work.

What kind of people do this? Authors of FREEWARE programs come from many professions and backgrounds. The reason for the decision to market a program through the FREEWARE concept rather than the more traditional commercial ways are just as varied as the people. Some people simply want to share their work with others, and the money they receive is just icing on the cake. Others write the programs with the intent of selling it commercially, only to find out that there's not that much money to be made in the TI software marketplace due mainly (and sadly) to the passing around of commercial software within users groups. The FREEWARE route gives those persons receiving copies the opportunity to pay for the program if they'd like to. Could you imagine someone writing to a commercial software company and saying "John Doe gave me an illegal copy of your $49.95 program, and I think it's worth about $10 to me, so here's your $10 check."? It may happen, but I'd bet it's rare. These are not the only reasons for FREEWARE, just a couple of examples. For the most part, FREEWARE programs are of 'commercial' quality. Many are of higher quality than commercial programs of the same kind. The only thing you probably will not get with FREEWARE is a printed instruction manual. Most documentation is provided from within the program, and any written instructions are usually provided as a text file on the disk which you must print for yourself.

Now that you understand the concept of FREEWARE, you should be aware of your responsibilities as a user. If you receive a FREEWARE program from a friend or users group, you have two decisions. First and foremost is whether or not to pay for it. This decision should be made with respect to the considerations outlined above. The easiest decision to make is whether or not to give copies to others. Remember, you are a vital part of the FREEWARE wheel. The more people that are exposed to an author's programs, the more money he is likely to receive for his efforts, which makes it more likely that he will continue to make quality software available for users. If you see an announcement for a FREEWARE program in a newsletter or magazine and would like

to try it out, your responsibilities are greater. Again, the word FREE throws some folks off. As you know, there's no such thing as a free lunch. You can't just write or call a FREEWARE author and ask him to send the program. These are not big businesses with big budgets. You are expected to provide the recording media (in most cases a floppy disk), and the cost of returning that media to you. That means that the program is not 100% free to you. You should always send an initialized disk, a mailer that's in good shape, a return address label, and sufficient postage to mail the disk back to you. Some FREEWARE authors will provide all this for you for a small fee, but remember, that fee only covers the media, mailer and postage, and should not be considered as payment for the program. Most FREEWARE announcements will tell you what is expected by the particular author. If you're not sure, go overboard. Send an initialized disk, stamped-self addressed disk mailer and a letter stating your request and your willingness to provide anything else necessary to receive the program. By all means, do send a note or letter stating your request. NEVER just send a disk. Some authors have more than one program available, and it's hard to read your mind on the other side of the country! That brings up another point . . . Unless the announcement specifically states otherwise, send a separate disk for each program requested. Again, in most cases the announcement will fill you in on the details. If it mentions a 'disk full of programs then one disk will probably do, but if it tells of two or more programs separately then it's a good practice to send a disk per program. Remember to always send initialized disks. This cuts down on the time involved for the author to return a copy to you. And, be patient. For the most part, FREEWARE authors have regular jobs, and their time, like everyone's, is at a premium.

After you have received your copy of the program(s), your responsibilities are the same as outlined for persons who got the program from a friend. If you have questions, comments, etc., about the program and decide to contact the author just remember to make it easy for him to accomodate you. If the documentation with the program lists the authors phone number, then most likely he will be willing to talk to you if you call. Just be sure you call at a reasonable hour, usually not after 9 PM in the author's time zone. If you write, be sure to send a legal size SASE for the reply. Don't expect the guy to bend over backwards to answer your questions if he has to provide the envelope and postage to send the answer to you.

Hopefully, you now have a better understanding of the FREEWARE marketing system. Below is a list of persons who have FREEWARE available, with a short description of their program(s). This list is by no means a complete listing of all FREEWARE programs, just the ones that I know of. The dollar amount specified is the author's suggested payment price for the program. All the authors listed require an initialized disk, addressed disk mailer, and return postage as the minimum for returning their program to you. Some offer to provide these items for a small fee. Those are noted.

Steven Lawless, 2514 Maple Ave. Cedars, Wilmington, Delaware 19808

MASSCOPY ($10) a disk copy utility.

Tom Knight, 7266 Bunion Dr., Jacksonville, FL 32222

SUPER DISK DUPLICATOR ($10) and TK WRITER ($7.50)

Clint Pulley, 38 Townsend Ave., Burlington, Ontario, Canada L7T 1Y6

SUPER COPY ($10) and 9900 BREAK-THRU ($10)

Gary Cox,, 3174 Melbourne, Memphis, TN 38127

WEATHER FORCASTER ($5) in Extended Basic.

John Taylor, 2170 Estaline Dr., Florence, AL 35630

SPRITE BUILDER (no amount specified)

Danny Michael, Rt. 9, Box 460, Florence, AL 35630)
NEATLIST (up to $10) and SCREEN DUMP (no money requested).

A NEW TI COMPUTER?

There have been rumblings in the TI computer world for months about a new TI compatible computer rising like a Phoenix from the ashes of the 4a. At last it has been put on view for the world, or at least Chicago, to see.

During October 1985 the Chicago TI Users Faire took place and just under 2,000 visitors attended, from all over the States. One of the chief exhibitors at the event was Myarc Inc. of Basking Ridge, New Jersey, U.S.A. and the president of the company, Lou Phillips gave a seminar of their products.

Lou, who in the photograph we have seen looks uncomfortably like Basil Fawlty, showed a board in one hand and a shell in the other, announced "we are going to come through..." Unfortunately the new computer was not seen to be working as they had forgotten the disk-based operating system!

The new computer looks very much like an IBM.(Future plans include an IBM compatible Microsoft internal card expansion.) It has a numeric pad; function keys on top, one key press and it is beige in colour.
These are it's credentials:-

1. TMS 9995 chip.
2. 256K bytes main memory.
3. 64k VDP (The 4a has 16K).
4. 64k ROM (" " " 8K).
5. Parallel output.(No input)
6. RS 232.
7. 2 internal expansion slots.
8. Cartridge port on top of keyboard.
9. Mouse support.
10. 30 Mhz clock.
11. G.P.L. interpreter in ROM instead of GROM.
12. Event driven keys.
13. Will use 16K RAM at power up leaving 240K.
14. Physical memory map; due to the mapper able to support 2 Meg. of main memory. (256K internal plus 3 outboar expansion banks on 512K card now bein manufactured with jumpers on card.)

The central processor used in the new computer is the TMS9995, this chip is similar to 9900 and therefore will be approx. 95% compatible but will not support speech. It had 254 bytes internal RAM memory, load vector and timer and will run more than twice the speed of the 9900 because it implements an on board 16 bit parallel memory. While running the BASIC interpreter will occupy three 8K segments and each 8K segment will have one each of program page, string space and symbol space.

The 9938 chip made by Yamaha in Japan will support 2 text modes, 8 graphics modes, 512 colours, RGB or composite monitors. TEXT 2 mode will have 80 x 24 lines or 80 x 26 lines. GRAPHICS mode 1 will be exactly the same as the 4a; 4 sprites on a line. GRAPHICS 2 allows 10 sprites. GRAHICS 2 and 3 - 8 x 8 dots per character for a total of 768 possible patterns, 16 colours of 512 per screen. GRAPHICS 4 will be 512 x 212 dot or pixels per screen but by interlacing can be doubled to 512 x 424. GRAPHICS 6 wil have 16 colours per screen but with each pixel individually addressable. In another GRAPHICS mode you will be able to address two screens enabling some very interesting animation by going back and forth between the two. The 9938 has 32 control registers compared to the 9918 which had 5 or 6.

At the moment little is known about compatibility with exsisting TI hardware but it will run with Myarc's own memory card using the TI Peripheral Box as a card cage. The console will be connected to the P.E. box using a flexible cable.

Lou Phillips stated they are committed to produce the computer and hope to see the launch in the first quarter of 1986. They will be putting users in the league of the Atari ST and Amiga. Unlike TI , Myarc intend publishing a technical manual.

Our own Howard Greenberg from Arcade Hardware is visiting Myarc in the New Year and will hopefully report on the ?99/128? soon.

What about a name for the computer, we have been told that an appropriate name, would you believe is "NOAH"

This news is brought to you with thanks to Laura Burns of MICROpendium, and, Jane LaFlamme of Ottawa Users group, who was at the Faire.

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MINIMEM
Conversion to rechargable battery. Send your minimem & crossed cheque £7.50 to N.J.Petry, TENSAL TECHNOLOGY, 3 Lester Drive, WORLE, W.S.M., Avon, BS 22 ONG.

Without a printer?
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****

by EVERT SMIES.

EXTENDED BASIC ASSEMBLER PROGRAMS ON CASSETTE

Some time ago I was asked if it was possible to record assembler programs on cassette for use with the Extended Basic module. The problem arose, because many people now have a D.I.Y. 32K RAM expansion without having a Disk Memory System.

At first sight the answer to the question seemed negative, but I have found a sort of half-hearted solution for the problem.

Unfortunately it not (yet?) possible to record programs on cassette without disk-drive, but once recorded the assembler programs can be loaded at will. So you need a friend with a disk-drive for the following procedure.

The method is based on the possibility to MERGE Extended Basic programs. SAVE DSKx.bbbbbbbbbb,MERGE records an Extended Basic as a DIS/VAR 163 file. Each Basic instruction is assigned a "token", the ASCII-value of which is written on the file. Of course it is possible to make one's own file of ASCII-values, which may be merged with another program.

From Peter Brooks' table you will remember that DATA has ASCII-value 147, an unquoted string has ASCII-value 200 and that the length of the string gets the corresponding ASCII-value. A program line is ended by ASCII-value zero and a program is terminated by two ASCII-values 255.

Knowing this the rest is rather simple.

The following program first loads the assembler program and then converts the assembler program into DATA lines in MERGE format by means of CALL PEEK instructions.

```
100 CALL CLEAR :: PRINT "FILE NAME OF ASSEMBLER":"PROGRAM ";:: INPUT A$
:: PRINT :"OUTPUT FILE ";:: INPUT O$
110 OPEN #1:O$,DISPLAY ,VARIABLE 163,OUTPUT :: CALL INIT :: CALL
LOAD(A$)
120 CALL PEEK(8194,A,B,C,D):: LN=90 ::
X$=CHR$(A)&CHR$(B)&CHR$(C)&CHR$(D):: GOSUB 200
140 AY=0 :: FOR AD=9460 TO A*256+B-1 :: GOSUB 180 :: NEXT AD :: GOSUB
200
160 AY=0 :: FOR AD=C*256+D TO 16383 :: GOSUB 180 :: NEXT AD :: GOSUB
200
170 PRINT #1:CHR$(255)&CHR$(255):: CLOSE #1 :: STOP
180 CALL PEEK(AD,X):: AY=AY+1 :: X$=X$&CHR$(X):: IF
AY/150=INT(AY/150)THEN GOSUB 200
190 RETURN
200 LN=LN+10 :: L1=INT(LN/256):: L2=LN-L1*256 :: PRINT
#1:CHR$(L1)&CHR$(L2)&CHR$(147)&CHR$(200)&CHR$(LEN(X$))&X$&CHR$(0)::
X$="" :: RETURN
```

Address 8194 (>2002) contains FSTLOW en LSTLOW, which indicate the length of the assembler program and the DEF-table. The assembler program, provided is was relocatable, was loaded from address 9460 (>24F0) through FSTLOW - 1. De DEF-table runs from LSTLOW through 16383 (>3FFF). FSTLOW and LSTLOW are peeked first and put into the first DATA line with line-number 100. Then the assembler program follows and the file is completed by the DEF-table. Assembler program and DEF-table are written in 150 bytes DATA lines.

If the created DIS/VAR 163 file is merged with the following Extended Basic program, a new program is created which loads the assembler program from its own DATA lines. This new program may be saved both on diskette and on cassete. The latter is what we meant to do.

```
1 DIM A(3):: CALL INIT :: AD=9460 :: READ X$ :: FOR I=0 TO 3 ::
A(I)=ASC(SEG$(X$ ,I+1,1)):: NEXT I :: EA=A(0)*256+A(1)-1 ::
TA=A(2)*256+A(3)
2 FOR I=1 TO INT((EA-9460)/150)+1 :: READ X$ :: FOR J=1 TO LEN(X$)::
CALL LOAD(AD,ASC(SEG$(X$,J,1))):: AD=AD+1 :: NEXT J :: NEXT I
3 AD=TA :: FOR I=1 TO INT((16383-TA)/150)+1 :: READ X$ :: FOR J=1 TO
LEN(X$):: CALL LOAD(AD,ASC(SEG$(X$,J,1))):: AD=AD+1 :: NEXT J :: NEXT I
4 CALL LOAD(8194,A(0),A(1),A(2),A(3)):: STOP
```

Loading an assembler program in this manner takes much more time than loading a DIS/FIX 80 object file by CALL LOAD. An advantage, however, is a considerable reduction of required disk space (in one example 15 sectors instead of 31). Further to my knowledge it is the only way of saving an assembler program for Extended Basic on cassette.

The same trick may of course be applied to save assembler programs for TI Basic and Editor/Assembler or Mini Memory on cassette. Owners of an Editor/Assembler module will however have a Disk Memory System and the Mini Memory itself allows saving assembler programs on cassette without the fuss of Basic programs.

Evert J. Smies
Meiendel 13 Netherlands
2036 HN HAARLEM Phone +31 23 35 43 07

TEXAS INSTRUMENTS

PW/MM

Times Magazine
40 Barrhill
Patcham
Brighton
East Sussex BN1 8UF

29th. November 1985

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For Texas Instruments

European Consumer Division

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REGISTERED IN ENGLAND NO 574102 REGISTERED OFFICE MANTON LANE BEDFORD MK41 7PA

CALL LOADS IN 32K

Call Loads require Memory Expanaion and either Extended BASIC or the Editor/Assembler.

NOTE: You must first use CALL INIT prior to using any CALL LOAD.

CALL LOAD(-31740,X,Y) Loads Sound Chip. X Y=-255 to 255. Sound continues until Call Sound, Input or Error.

CALL LOAD(-31744,X) Continue Last Sound. X=0 to 15. 0=Loud, 15=Quiet

CALL LOAD(-31745,0) Freezes Screen, Then Blanks Screen. Restore Title Screen w/FCTN -

CALL LOAD(-31748,X)
CALL LOAD(-31804,X) Set Cursor Blink Rate. X=1 to 255.

CALL LOAD(-31788,160) Blank Screen When Next Key Hit.

CALL LOAD(-31788,192) Disables Sprite Motion Automatic Sound.

CALL LOAD(-31788,224) Normal Operation.

CALL LOAD(-31788,225) Magnified Sprites.

CALL LOAD(-31788,226) Double Sized Sprites.

CALL LOAD(-31788,227) Magnified Double Sized Sprites.

CALL LOAD(-31788,232) Multicolor Mode in 48 by 64 Squares.

CALL LOAD(-31804,0,36)
CALL LOAD(-31961,51)
CALL LOAD(-31962,32)
CALL LOAD(-32730,32)
CALL LOAD(-31730,33) Quits From XBASIC to Master Title.

CALL LOAD(-31806,0) Enables Sprite Motion, Quit Key Sound Chip.

CALL LOAD(-31806,16) Disables Quit Key.

CALL LOAD(-31806,30) Stops Sprite Motion Disables Quit Key.

CALL LOAD(-31806,32) Disables Sound Chip.

CALL LOAD(-31806,-32) Continuous Sound.

CALL LOAD(-31806,48) Disables Sound Chip Quit Key.

CALL LOAD(-31806,64) All Sprite Motion Stops.

CALL LOAD(-31806,96) Stops Sprite Motion Disables Sound Chip.

CALL LOAD(-31806,128) Disables Sound Chip, Quit Key, Sprites.

CALL LOAD(-31860,4)
CALL LOAD(-32116,4) Go from XBASIC to Console BASIC After New. Can NOT use Mem. Exp.

2022 comment - A nonsense list popular with user groups, untested, without application or explanation. A meaningless space filler. bb.

```
CALL LOAD(-31860,8)
CALL LOAD(-31961,149)
CALL LOAD(-31962,255) Automatic Run of "DSK1.LOAD". Restarts XBASIC.

CALL LOAD(-31866,X) Does Not Access Full 32K. X=1 to 159.

CALL LOAD(-31868,0) No "RUN" or "LIST" after "Fctn 4" is used.

CALL LOAD(-31868,0,0) Memory Expansion Off.

CALL LOAD(-31868,255,231) Memory Expansion On.

CALL LOAD(-31873,X) Start PRINTing at Column X. X=3 to 30.

CALL LOAD(-31878,X) Turn Off Sprites. X=# of Highest Sprite.  If X=0 Then
All Sprites Off.

CALL LOAD(-31884,X) Change Keyboard Mode. X=0 to 5.

CALL LOAD(-31888,63,255) Disk Drive Off. Type NEW to Free Mem.

CALL LOAD(-31888,55,215) Disk Drive On. Type NEW for Buffers.

CALL LOAD(-31931,0)
CALL LOAD(-32699,0) Unprotect XBASIC Program.

CALL LOAD(-31931,2) Set Command "On Warning Next".

CALL LOAD(-31931,4) Set Command "On Warning Stop".

CALL LOAD(-31931,16) Set Command "Trace".

CALL LOAD(-31931,64) Set Command "On Break Next".

CALL LOAD(-31931,128)
CALL LOAD(-32699,128) Protect XBASIC Program.

CALL LOAD(-31952,X) If X=55 Then "Mem Exp Is Off" Else "Mem Exp Is On."

CALL LOAD(-32112,8) Searches Disk.

CALL LOAD(-32114,2) Random Garbage.

CALL LOAD(-32114,13) Screen Goes Wild.
CALL LOAD(-32116,1) Random Characters on Screen.

CALL LOAD(-32187,9) 0 line #.

CALL LOAD(-32188,1) Change Color  recieve Syntax Error.

CALL LOAD(-32188,127) Change Color  recieve a Breakpoint.

CALL LOAD(-32572,1) Produces "Mushy" Keyboard w/Improper Characters.

CALL LOAD(-32572,128) Disables Keyboard.

CALL LOAD(-32630,0) Master Title w/No Graphics. Shift Key Disabled.

CALL LOAD(-32630,16) Locks Up Computer.

CALL LOAD(-32699,16) Start Trace.
CALL LOAD(-32699,14) Stop Trace.
```

DATA FILES WITHOUT TEARS PT1.

by Peter Walker

This article aims to explain the mysteries of data files, which are not well covered in the user manuals and which can seem very confusing to the beginner. Even if you only have a basic system of console and cassette recorder, I will explain how you can use data files.

You may have read the User Manual and waded through the information on file processing, but confronted with the choices of INTERNAL/DISPLAY, FIXED/VARIABLE, RELATIVE/SEQUENTIAL, you may have wondered:

When should I use the different variants?
What are their advantages?

If the foregoing strikes a chord, then this article is for you.

WHAT IS A DATA FILE?

A data file is a sequence of information stored on a storage device, such as a cassette tape or floppy disk. Such a file is independent of the BASIC program which reads and writes to the file, and is quite different from DATA statements used within a program, which cannot in general be altered by the program. Not all devices external to the computer are used for data storage, but the method which the computer uses to communicate with external devices is common to both storage and non-storage devices. Thus "files" are used both for data storage and to send information to printers, modems etc. The devices recognised by the 99/4a are:

CSn The 2 Cassette Recorders (n=1-2)
DSKn The 3 disk drives (n=1-3)
RS232[/2] The 2 serial communications ports
PIO The parallel printer port (Centronics)
SPEECH The speech synthesizer
ALPHON Speech synthesizer (access to Allophones)
MINIMEM The mini memory 4k store
EXPMEM2 24k memory accessed using Mini Memory
TP The Thermal Printer

Clearly, only a few of these devices are useful for data storage. Given the large number of possible devices with which the computer might need to communicate and given that the 99/4a needs to allocate a buffer area in memory for each file device, files are OPENed when communicating with them and CLOSEd when finished with. This minimises the buffer areas consumed. When open, each file is given a reference number for use when later reading or writing to it, which can be any number between 1 and 127. However only 3 files can be open at any one time, unless CALL FILES(N) was used prior to running the program. N represents the maximum simultaneous number of files that can be opened, up to a maximum of 9.

HOW IS A DATA FILE ORGANISED?

As with all computer information, data files are strings of binary ones and zeroes. These are grouped into 8 bit "bytes" thus allowing each byte to take one of 256 values. These bytes can be used to represent characters using the ASCII code, or combined in other ways to represent floating point numbers. It is possible for a data file to comprise nothing more than an

unstructured string of bytes. Such files are known as program files since this is way in which BASIC programs themselves are stored when SAVEd. PROGRAM files cannot be accessed by BASIC for storage purposes, although modules such as Personal Record Keeping (PRK) use this form of data file. All files accessed by BASIC have various structured arrangements so as to divide the complete file into a series of RECORDS, each of which will contain one or more data ITEMS. It is worth noting that the user manual does not explain very well the distinction between RECORDS and ITEMS - I hope I can make this more clear. For example, if our data file contains a list of names and addresses, we will want to divide the data file so that each named person has one record each, and within the record there will be several items eg forename, surname, street address, town and so on. If on the other hand a file contains a piece of written text, it is convenient to put one line of text in each record. It is not usually useful to further subdivide the line into items (eg one word per item) so text usually has only one item per record ie the complete line. When you want to store information in a data file you must first design your file: what will each record contain, how many items, what kind of items (Numeric/String), and how long each record can be. When a file is opened, BASIC requires you to specify some of these data file attributes in the OPEN statement. If you don't certain default assumptions will be used instead, although these may be quite sufficient in some cases. Let us now look at the OPEN statement and the file attributes used.

OPENING A FILE

The format of the OPEN statement is:

OPEN #file-number:device[,record-type][,file-type][,file-organ.][,open-mode]

The items in square brackets are optional (default settings if omitted) and can be in any order. For example to open a file to the parallel printer port for 80 column printing it is only necessary to use OPEN £1:"PIO" . The default settings DISPLAY, VARIABLE 80 are appropriate here.

READING AND WRITING TO A FILE

Just to be confusing, BASIC uses the statement INPUT to read from a file and PRINT to write to a file. These are the same statements as used to input from the keyboard and display on the screen. The difference is that the file reference number is quoted when using a file, eg:

Print #1:"This goes onto a file"

An interesting feature is that if file £0 is used then the keyboard/screen is used as if the file number had been omitted. This is of use when branching program output between the screen, the printer or disk as is done by the Disk Manager and several other programs. File 0 is always open and cannot be closed.

Now let us look at the items in the OPEN statement in more detail.

DEVICE (otherwise known as filename)

This is the external device as listed above, such as CS1, MINIMEM etc. Because of the particular flexibility of disk files, it is also necessary to give each file a name, so for disks the device has a suffix comprising the filename, viz:

DSK2.ADDRESSES for a file called "ADDRESSES" on disk drive 2.

For all other devices only the device name is used although some other settings for the particular device are also suffixed to the device name where needed. For example PIO.LF is the device name for the parallel printer port when automatic line feeding is suppressed.

PERMANENT ATTRIBUTES

Record-type and File-type are the only permanent attributes of a file and are fixed once the file is created. By contrast file-organisation and open-mode are relevant to the way the file is accessed on each occasion it is OPENed, and may be different on each occasion if desired.

RECORD TYPE

This can be FIXED or VARIABLE. FIXED records all have the same length, while VARIABLE records can vary in length up to a specified maximum (eg VARIABLE 96) or the default maximum which is 80 for disk, RS232 and PIO files and 64 for Cassette files. Taking our examples above of a name/address file and a text file, it is clear that lines of text vary in length and so too does the totality of items in the name/address file. By using VARIABLE length records it is possible to save space on the storage device since there will not be any gaps between the data in successive records. By contrast if we use fixed length records, each record will comprise the stored data plus padding bytes to fill it out to the fixed length. It would appear therefore that VARIABLE files would always be preferred to FIXED. Why then would one ever use fixed length records? The answer to this is, use FIXED length records in the following cases:

1 When using Cassettes CS1/2. Cassettes cannot regretably use variable files.

2 When the file-organisation is RELATIVE (see below). Any file which is opened initially or at any other time in relative mode must use fixed length records.

3 When the information you wish to store is inherently of fixed length, for example if each record is a single number in INTERNAL format it will always occupy 9 bytes.

4 When you need to read files created by other programs which use FIXED format. Both Multiplan files and Editor/Assembler object files use FIXED format.

VARIABLE length files should be used in other cases, unless you are not worried about saving file storage space. VARIABLE records must be used if the open-mode APPEND is to be used. In order that the computer knows when one variable record ends and the next begins, each record begins with a single byte length indicator. You do not have to worry about this, as this is inserted automatically.

FILE TYPE

This can be DISPLAY or INTERNAL. Ignore what the user manual says about file-type, it is largely nonsense. DISPLAY format is used when then data is to be stored as ASCII characters in all cases. For example the word "BOX" would be stored as 3 bytes: 66,79,88 being the ASCII codings for B,O,X.

Similarly the number 23 would be stored as 50,51. DISPLAY format must be used if the device needs it. Storage devices can use either DISPLAY or INTERNAL, but printers which print characters using the ASCII code must use DISPLAY. If you opt for display format for a data file then one should only plan to use one item of data per record. The reason for this is that if you PRINT two or more items to a DISPLAY record eg:

```
PRINT #1:"BOX";"TOP"
```

then when you read from the created record you only get one item back "BOXTOP". DISPLAY files require comma seperators between items plus quotemarks around each string item and you have to insert all these yourself. This is highly inconvenient which is why I don't recommend multi-item display records. If you insist then read the User Reference Guide page II-133 but my advice is DON'T BOTHER! If each record contains several data items USE INTERNAL format! (I suspect that the complications of trying to use multi-item display records is typical of the problems that put people off using data files at all: later on I will show you how you can store several items in a display file without all this complication)

So what is INTERNAL format? Well string items are still coded as ASCII strings but there is a single byte length indicator at the beginning of each item, which considerably eases the problem of finding items within a record. So for example "BOX" would be stored as 3,66,79,88 and "23" (a string) as 2,50,51. Numeric items are stored as 8 byte items with a length byte as for string items. The 8 byte coding allows floating point numbers to be stored in the same way as the computer uses internally. This is called Radix 100 code and page III-13 of the manual gives further information. By way of example the number 23 stored as a numeric would be: 8,64,23,0,0,0,0,0,0.

OPEN-MODE

This can be INPUT, OUTPUT, UPDATE or APPEND. This describes how you want to access the file on this occasion. With INPUT mode you can only input data, with OUTPUT you can only print. Using UPDATE you can both input and print. APPEND only allows you to print to the file and all records printed are appended to the end of the file. For reasons that are not completely clear, APPEND can only be used with VARIABLE files which somewhat limits its usefulness. (I guess the reason for this is that FIXED length files don't use the End of file offset in the directory to point to the end of the stored information). Those who don't possess a disk system will also be disappointed to find that cassette recorders can only use INPUT and OUTPUT modes. (A cassette can only play or record - not both simultaneously).

FILE-ORGANISATION

This can be RELATIVE or SEQUENTIAL. Since SEQUENTIAL is the default setting you never need to expressly include it. SEQUENTIAL operation means that successive INPUT or PRINT statements work sequentially through the file. By contrast, with RELATIVE operation (which requires the use of FIXED length records) you can input and print from any specified record. For example:

```
PRINT #1,REC 5:A
```

will write the value of A to the 5th record in the file, or rather the 6th since the first record is REC 0. When are these two forms of file access useful?

When updating or processing with a file there are two ways in which the file information can be used. In the first method the file is opened and its entire contents are read and stored in an array. A set of arrays or a two-dimensional array would be used if there are several items in each record. When all necessary processing is complete the array(s) are printed back to the file. By so loading all the data into RAM memory all the processing can be performed fairly quickly (subject to our beloved machine's general lack of speed). However if your program is long and the data file voluminous, you can easily run out of internal memory. In this instance the second method of file processing is used which employs RELATIVE file organisation. Instead of loading the entire file into memory, each record that is required for processing or updating is input using the relative REC clause, and when finished with is printed back. This obviously uses far less memory but has the disadvantage of delays every time a record is inputted or printed. Using the REC number can be likened to indexing an element within an array. To demonstrate what I'm saying lets look at the two methods to search through a file to find a record with the string "Kermit" and amend it to read "Kermit the Frog".

METHOD 1

```
50 DIM A$(50)
100 OPEN #1:"DSK1.FILE",INTERNAL,FIXED 40
110 FOR I=1 TO 50
120 INPUT #1:A$(I)
130 NEXT I
140 FOR I=1 TO 50
150 IF A$(I)="Kermit" THEN 1000
160 NEXT I
```

In this simple example the two FOR-TO-NEXT loops could have been combined, but I wanted to demonstrate the general principle of loading the complete file into an array.

```
1000 A$(I)=A$(I) & " the Frog"
1010 RESTORE #1 This resets the file pointer back to the beginning of
the file.
1020 FOR I=1 TO 50
1030 PRINT #1:A$(I)
1040 NEXT I
1050 CLOSE #1
```

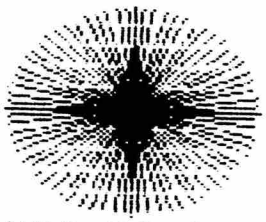
METHOD 2

```
100 OPEN #1:"DSK1.FILE",RELATIVE,INTERNAL,FIXED 40
110 FOR I=1 TO 50
120 INPUT #1,REC I:A$
130 IF A$="Kermit" THEN 1000
140 NEXT I
-----
1000 A$=A$ & " the Frog"
1010 PRINT #1,REC I:A$
1020 CLOSE #1
```

Since cassette tapes can only run forward at a set speed, you cannot use RELATIVE files with cassettes. Disks can use this form of access because the position and sector of each record (IF FIXED) can be located and read individually.

Next issue of TI*MES...

Peter Walker will write about DESIGNING A DATA FILE
If anyone would like to contact Peter, please write to : 24 Bacons Drive, Cuffley, Herts, EN6 4DU. Enclose S.A.E. for reply.



EXTENDED BASIC TUTORIAL

Funnelweb Farm

It's time once again to get back to the regular Tutorial material, continuing with the ways and means of scrunching program length. As I remarked before, it's a subject I'm not completely happy talking about because most things you can do in Basic make programs less understandable, given reasonable skill in the first place. The other reason for the reluctance is that this kind of discussion tends to degenerate into a collection of unrelated items, yet another set of "Tips", when I really want this series to be a gentle but systematic look at the workings of the machine and its language(s).

Anyway let's start at the small end of things and work up to the larger scale. Last time we looked at the space taken by simple variables. The most obvious thing is to keep variable names short. I don't recommend this until late in the piece because it is such a cheap and obvious way of gaining bytes that you might as well have the help of descriptive variable names until you are absolutely desperate for bytes. The shortest variable name has only one letter character, but TI Basics also officially allow "" (shift-2) and "_" (fctn-U) as variable names. It has to be a fairly long SUBprogram before you need more than 26 simple numeric variables but it can happen. On this console there are 3 other single characters which can be used as variable names. Experiment to find if they exist on your machine. The nagging problem is that they are not documented.

There is another way to use variable names to shorten a program. Remember from last time that a one digit numeric constant is treated as a string and takes 3 bytes, while a single letter variable takes only 1 byte. If a particular numeric value occurs frequently in a SUBprogram, 0 or 1 being common examples, then it may be worth the overhead, 14 bytes plus the defining statement, for a new variable of that value if you can then save 2 bytes on numerous occasions. A frequently used longer numeric constant, as might occur in CHAR or SPRITE manipulations, yields more bytes each time. It is a matter of doing careful book-keeping and byte counting in each SUBprogram. Once you start down this track be alert for further gains -- if you have defined S=7 and F=5 then it saves a byte to write S*F instead of 35. If you can reuse an already defined variable name then the investment is paid back faster, but this requires keeping very careful track of program flow. Go back to the example of a Key/Joystick routine in an earlier Tutorial and see if you can shorten it by reducing the number of variables used.

Replacement of numbers by variables has precedents in other languages. In TI-Forth the numbers 0,1,2,3 are not treated directly as numbers but are defined words in the language.

There is another little way that cunning entry of characters can shorten programs. This is in the entry of graphics characters with ASCII values above 127 in the upper color groups of XB by writing strings with DISPLAY AT instead of H VCHAR CALLs. Characters in this range can be entered in

strings in program statements by use of the CRTL key, rather than by using the CHR$ function. It does tend to make the program incomprehensible as these echo as blanks to the screen. They will appear with their defined shapes if the line is called up for editing after RUNning the program. These codes are also used as XB tokens and can only be used within strings. I should add in passing that I am in total agreement with the TI designers' choice not to allow abbreviated (direct token) entry of Basic keywords.

The use of arrays to represent small collections of numbers needs detailed working out. The gains from less variable table overhead and simplified parameter passing to SUBprograms have to be balanced against the extra bytes needed for each program reference. Let the program logic be your initial guide.

This idea of using fewer bytes to represent quantities leads on to the larger subject of data compaction. One byte can carry 256 different values, and one third to one half of those can be conveniently entered from the keyboard. It's sheer overkill to use an 8 byte floating point number to represent just a few values, or even just a logic (Boolean) variable which really needs only one bit. Some languages compact Boolean variables as bits in a word or words. The CRU single bit bus of the TMS-9900 provides an ideal mechanism for bit storage and testing, but as in so many other areas the 99/4a hardware does not do it. The later TMS-9995 in fact has a little on-board CRU memory for just this purpose.

Opportunities for data compaction are limited in XB both because of the structure of the language (it has only character strings, floating point numerics and arrays of these as data types) and the convoluted, slow way it is implemented. Any scheme for coding or compacting needs computation to pack and unpack the data. At the machine code level the tradeoffs between memory use and speed are different from those in Basic, especially TI-99 Basics, because Basic is so much slower. In my experience the use of string variables to compact data in active parts of a program is almost always doomed to failure because of slow string handling by XB and pauses for garbage collection. Data compaction can be useful though in setting up initial graphics designs or for music data. There are only so many different notes, in pitch length and volume used in any given short musical piece, and since each note takes time to play and is handled by the machine on an interrupt driven basis, this time can be used to do the computations needed to unravel the data for the next note.

Let's have a look at the graphics screen example. Suppose that in setting up a game screen, either one of two characters, maybe the same pattern in two different color groups, has to be written to 20 locations in various parts of the screen. The simplest way is a whole succession of CALL HCHARs - assuming the display is not suited to generation with DISPLAY ATs - and that's the way you will find it done in many programs (just like long lists of CALL SOUNDs). What is totally unforgivable is to find incompetent magazine or commercial programs with inefficient coding that force inconveniences like CALL FILES(1) on the user.

```
1000 CALL HCHAR(23,12,105) 1010 CALL HCHAR etc etc
```

This takes over 600 bytes. How can it be shortened ? One way, a bit of a dead end in this example, is to use multi-statement lines. This would be shorter by 30 bytes or so, and marginally faster. The real improvement is to eliminate the repetition of CALL HCHAR - remember CALL is cheap but HCHAR is expensive - by using a loop and DATA statements.

```
1000 FOR I=1 TO 20 :: READ A
,B,C :: CALL HCHAR(A,B,C)::
NEXT I
1010 DATA 23,12,105, etc etc
```

Now all but one of those HCHARs have gone. The price paid is loop and DATA execution overhead and the increased possibilities for clerical errors since the DATA items have been divorced from their proper context. At this stage you may be feeling very pleased with yourself, but then you find that to add another feature to your program you need more space. Now is the time to reflect on data compression. A column index for HCHAR can only have the values 1 to 32 and rows 1 to 24. One of these values can be expressed by 1 byte with possibilities to burn. Say you use 1 byte for each row or column value then. Expressing the bytes efficiently as DATA is the next problem - there are a few bytes of overhead for each item in a DATA list, and DATA lists of a lot of short items are notorious for causing a "line too long" error. So let's pack them in a single string and use SEG$ to unpack them, with ASC to turn a ASCII character back to a value for HCHAR. A minor problem is that characters 1 to 32 can't be entered directly in XB, so just use characters starting with "A" and subtract 64. The opposite problem may occur with the string for the character values if upper graphics sets are being used. Then just use lower values and add a correction. So now the code might look like:

```
1000 READ A$,B$,C$ :: FOR I=
1 TO 20 :: CALL HCHAR(ASC(SE
G$(A$,I,1))-64,ASC(SEG$(B$,I
1))-64,ASC(SEG$(C$,I,1)+32):
: NEXT I
1010 DATA "W...  ","L...  ","I.
```

You could further pack the data into a single string and modify the SEG$ statements accordingly, but it might not be worth it. Remember now that the problem posed involved writing only two different characters and work out how you could compact things still further for this limited case. This example is based on one of methods that was used to squeeze TXB into console memory. An extreme example of data compression comes when the data is regular enough that it can be generated by a formula or procedure. This is something that has to be worked out in each case.

The use of loops as in the examples above applies in other situations, particularly in CHAR definitions. XB allows the use of multiple arguments in CHAR, COLOR, SPRITE and suchlike SUBprograms. This is better and faster than using individual SUBprogram CALLs for each item in the list. The real dilemma comes when you try to use a loop to compact the program further. Critical parts of the program may be slowed down unacceptably so that you may find yourself using compact slow code in some parts of a program and longer but faster forms elsewhere. Just in passing I should remind you to null out on exit from a SUBprogram, any string variables not required to keep their value till the next CALL. This particularly applies to string variables used for READ, INPUT, PRINT etc operations involving long strings. Remember that it is the length of a program while RUNning that really counts.

Time to sign off for this issue now. Next Tutorial will continue with more aspects of byte saving.

by DEREK FORD

D. I. Y. H A R D W A R E

I thought I would have a look at printer interface cables with the idea of home users,who could aquire a printer,could make their own interface cable.

This information is accurate as far as I can make out but remember I'm only learning as I go along.

I wanted to make an interface to run an EPSON RX80. In fact it should suit all EPSON printers and all EPSON based printers including the STAR GEMINI 10. etc.

If anyone wants to discuss/argue points, then my address is 37 Stotfold Road, Maypole, Birmingham, B14 5JD.

Actually it's thanks to Uncle Clive/Aunty Audrey and even more to Howard Greenberg (Arcade) for their help in enabling me to put this interface together.

What's needed ?.

A 16 point socket to fit the parallel port of your RS 232. Cost about 1.50p for the "cheap" version which incorporates V slots to bite into ribbon cable to make the connections.

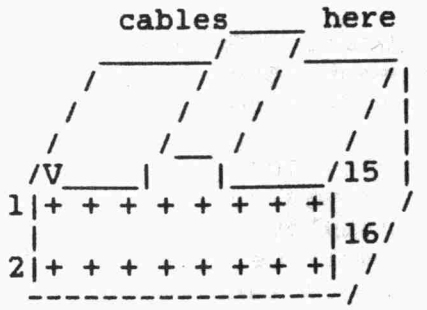
A 36 point CENTRONICS or AMPHENOL plug to fit the parallel port of your printer. Cost 3.00p for "cheap" (V slots for ribbon cable) or 5.00p for a more robust type with solder connections and taking standard multicore cable (or ribbon cable rolled up and taped).

Some two metres or so of suitable cable (I.E. to match the plugs). Only up to 13 wires are needed but the most suitable would be 16 'strand' ribbon or 16 core cable.

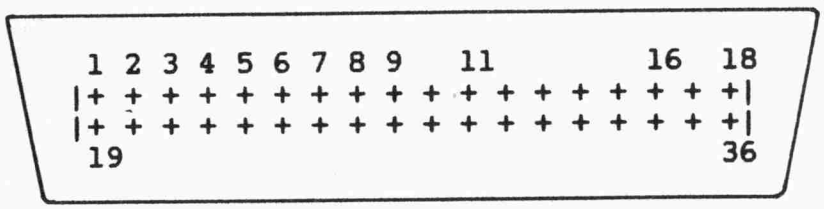
I shall describe three methods of wiring up an interface .I suggest you start with the first (easiest) then if it doesn't suit your printer,try the next. The reason there are different ways of wiring up these leads is that some computer/printer configurations require tighter controls than others. The T.I. is fairly loose (as professional computers go). The RX80 demanded tighter controls hence I had to use the second version.

The small 16 point plug will probably not have the terminals individually numbered. The number one pin is on the top left if you have the "location"shoulder uppermost (see drawing). There is usually a triangular arrow on the side of the plug pointing to terminal one. The terminals are numbered in pairs from top to bottom, left to right. This is handy because the ribbon cable will just snap in and you have the correct sequence I.E. The first wire is in terminal one, the second is in terminal two and so on. THIS IS NOT SO ON THE CENTRONICS PLUG.

The centronics terminals are numbered,top row first,left to right (1 to 18) then bottom row again left to right (19 to 36). Usually centronics plugs are numbered.



16 pin plug for RS 232



Centronics plug

IN ALL VERSIONS, connect terminals ONE to NINE on each plug respectively. That is terminal 1 (RS232) to terminal 1 (centronics).Terminal 2 (RS232) to terminal 2 (centronics) etc.

Then connect terminal 10 (RS232) to terminal 11 (centronics).

To finish off, take your pick.

VERSION ONE		VERSION TWO		VERSION THREE	
(RS232)	(CENTRONICS)	(RS232)	(CENTRONICS)	(RS232)	(CENTRONICS)
12 to	16	11 to	19	11+16 to	19thru30
16 to	17	12 to	14+31	12 to	14+31
		16 to	30		

Version three apparently covers all possibilities and only some of the connections are needed (between 19 and 30) depending on the printer configuration. VERSION THREE is "all connections for all printers". But I understand it will do no harm to T.I. or printer.

Derek Ford.

TIPS FROM TIGERCUB

Nuts Bolts is a diskfull of 100 (that's right, 100!) XBasic utility subprograms in MERGE format, ready for you to merge into your own programs. Contents include 13 type fonts, 14 text display routines, 12 sorts and shuffles, 9 data saving and reading routines, 9 wipes, 8 pauses, 6 music, 2 protection, etc., and now also a tutorial on using subprograms, all for just $19.95 postpaid! And I have about 140 other absolutely original programs in Basic and XBasic at only $3.00 each!(plus $1.50 per order for casette, packing and postage, or $3.00 for diskette, PPM) I will send you my descriptive catalog for a dollar, which you can then deduct from your first order.

Several different routines have been published which will extract and save a specified series of lines out of a program, but this one by George Steffen of the L.A. 99ers is certainly the best.

```
1 !SUBROUTINE EXTRACTOR by G
eorge F. Steffen. SAVE in ME
RGE format. MERGE into any p
rogram (with line # starting
 above 8). RUN to extract
2 !selected lines. Deletes i
tself. Then BE SURE to SAVE
the selected lines in MERGE
format because the remaining
 lines are still in memory!
3 CALL CLEAR :: CALL INIT ::
 INPUT "Line numbers of rout
ine to be saved: First,Last?
       ":L,M :: G=256 :: CAL
L PEEK(-31952,H,I,J,K)
4 C=INT(M/G):: D=M-C*G :: F=
(J-G)*G+K :: FOR E=(H-G)*G+I
 TO F STEP 4 :: CALL PEEK(E,
A,B):: IF A=C AND B=D THEN 6
5 NEXT E :: PRINT :"LINE";M;
"NOT FOUND!" :: STOP !@P-
6 H=INT(E/G):: I=E-(G*H):: H
=H+G :: C=INT(L/G):: D=L-C*G
 :: FOR E=E+4 TO F STEP 4 ::
 CALL PEEK(E,A,B):: IF A=C A
ND B=D THEN 8 !@P-
7 NEXT E :: PRINT :"LINE";L;
"not found!" :: STOP !@P-
8 E=E+3 :: J=INT(E/G):: K=E-
(G*J):: J=J+G :: CALL LOAD(-
31952,H,I,J,K):: STOP !@P-
```

Some folks were interested in the idea of a program that writes a program, so let's write a program that will write a program to list the token codes that you need to use to write a program that will write a program -

```
100 OPEN #1:"DSK1.TOKENLIST"
,OUTPUT,DISPLAY ,VARIABLE 16
3 :: FOR N=129 TO 254 :: L1=
INT(N/256):: L2=N-256*L1
110 PRINT #1:CHR$(L1)&CHR$(L
2)&CHR$(131)&CHR$(N)&CHR$(0)
:: NEXT N
120 PRINT #1:CHR$(255)&CHR$(
255):: CLOSE #1 :: END
```

Key that in and SAVE it just in case, then RUN it. When READY, type NEW, then MERGE DSK1.TOKENLIST. Now LIST it and you will see a list of ASCII codes 129 through 254 and their token meanings. Delete lines 171 through 175, 185, 198, 226 through 231, and 242. Change the definition of 199 to QUOTED STRING, of 200 to UNQUOTED STRING, and 201 to LINE NUMBER, and add line 255 END OF FILE. You don't need all those exclamation points, so change the program to a DIS/VAR 80 file by LIST "DSK1.TOKENLIST". Then key in this little routine.

```
100 OPEN #1:"DSK1.TOKENLIST"
 :: OPEN #2:"PIO"
110 LINPUT #1:A$ :: PRINT #2
:SEG$(A$,1,4)&SEG$(A$,6,LEN(
A$)):: IF EOF(1)<>1 THEN 110
120 CLOSE #1 :: CLOSE #2 ::
END
```

RUN it, and print out a list of all the token codes.

DSK Menu Loader: here is another version to use on your finalized library disks of programs. It lacks the features that you will no longer need, but will list your programs by their full names, up to 24 characters long.

```
100 !NAMELOADER by A. Kludge
/M. Gordon/T. Boisseau/J. Pe
terson/etc.
110 CALL CLEAR :: CALL SCREE
N(5):: FOR S=1 TO 14 :: CALL
 COLOR(S,7,16):: NEXT S :: C
ALL VCHAR(1,31,1,96):: CALL
COLOR(0,2,16)
120 OPTION BASE 1 :: DIM PG$
(99),M$(99)
130 ! List the full names of
 the programs on the disk in
 the DATA statements, in the
 sequence in which they are
 listed by an ordinary disk
 cataloger program
140 !Then SAVE this program
under the filename LOAD
150 DATA
160 DATA
170 DATA
180 DATA


190 DATA END
200 FOR J=1 TO 99 :: READ M$
(J):: M$(J)=SEG$(M$(J),1,24)
210 IF M$(J)="END" THEN M$(J
)=" " :: GOTO 230
220 NEXT J
230 IMAGE ##
240 DISPLAY AT(1,4):"TIGERCU
B NAMELOADER"
250 D$="DSK1." :: OPEN #1:D$
,INPUT ,RELATIVE,INTERNAL ::
 INPUT #1:P$
260 FOR X=1 TO 99 :: IF X/20
<>INT(X/20)THEN 290
270 DISPLAY AT(24,1):"Type #
 of choice or Enter 0" :: AC
CEPT AT(24,27)VALIDATE(DIGIT
)SIZE(-3):K :: IF K=0 THEN 2
80 :: IF K>0 AND K<NN+1 THEN
 390 ELSE 270
280 X=1
290 I=I+1 :: IF I>127 THEN K
=X :: GOTO 370
300 INPUT #1:P$ :: NN=NN+1
310 IF LEN(P$)=0 THEN 350
320 DISPLAY AT(X+3,2):USING
230:NN :: DISPLAY AT(X+3,5):
M$(NN):: PG$(NN)=P$
330 CALL KEY(0,KK,ST):: IF S
T=0 THEN 340 :: FLAG=1 :: GO
TO 350
340 NEXT X
350 DISPLAY AT(X+4,1):" " ::
 DISPLAY AT(X+5,2):USING 230
:NN+1 :: DISPLAY AT(X+5,6):"
Terminate"
360 DISPLAY AT(X+6,1):"    C
hoice?" :: ACCEPT AT(X+6,16)
SIZE(2)VALIDATE(DIGIT):K ::
IF K<>NN AND K<>NN+1 THEN 38
0
370 IF K=NN+1 THEN CALL CLEA
R :: CLOSE #1 :: END
380 !IF K<1 OR K>99 OR LEN(P
G$(K))=0 THEN 350
390 CLOSE #1
400 CALL INIT :: CALL PEEK(-
31952,A,B):: CALL PEEK(A6
+B-65534,A,B):: C=A6+B-65
534 :: A$=D$&PG$(K):: CALL L
OAD(C,LEN(A$))
410 FOR I=1 TO LEN(A$):: CAL
L LOAD(C+I,ASC(SEG$(A$,I,1))
):: NEXT I :: CALL LOAD(C+I,
0)
420 CALL VCHAR(1,3,32,672)::
 CALL SCREEN(8):: FOR S=0 TO
 14 :: CALL COLOR(S,2,1):: N
EXT S :: DISPLAY AT(12,2):"L
OADING ";M$(K)
430 RUN "DSK1.1234567890"
```

Need a filler, so -

```
100 !MUSICAL BARGRAPH by Jim
 Peterson
110 CALL CLEAR :: CALL SCREE
N(5):: FOR J=2 TO 14 :: X=J-
(J>4):: CALL COLOR(J,X,X)::
NEXT J
120 DIM N$(13),N(13):: M$="(
08@HPX'hpx"&CHR$(128)&CHR$(1
36):: FOR J=1 TO 13 :: N$(J)
=SEG$(M$,J,1):: DISPLAY AT(J
+6,1)SIZE(1):N$(J):: NEXT J
130 X=110 :: FOR J=1 TO 13 :
: N(J)=X*1.059463094 (J-1)::
 NEXT J
140 A=INT(13*RND+1):: B=INT(
25*RND+1):: DISPLAY AT(A+6,2
)SIZE(28):RPT$(N$(A),B):: CA
LL SOUND(B,N(A),0,N(A)*2+
4,0,N(A)*4+6,0)
150 DISPLAY AT(A+6,2):"" ::
GOTO 140
```

Last issue I forgot to have anything for the kids, or anything in Basic, so -

```
100 CALL CLEAR
110 REM by Jim Peterson of
Tigercub Software
120 PRINT TAB(1);"****AUTOMA
TIC MOUSE MAZE****": : : :"
  Choose your mouse and":"wa
tch it try to find its way"
130 PRINT "through the maze.
": :"   When one of the mice
 has":"taken 50 extra steps,
 the":"cat gets it!"
140 PRINT : :"Touch any key"
150 CALL KEY(0,K,ST)
160 IF ST<1 THEN 150
170 CALL CLEAR
180 CALL CHAR(120,"0078FEFFF
E78")
190 CALL CHAR(121,"1038387C7
C7C7C38")
200 CALL CHAR(122,"387C7C7C7
C383810")
210 CALL CHAR(123,"001E7FFF7
F1E")
220 CALL CHAR(128,"001E61816
11E")
230 CALL CHAR(129,"384444444
4242410")
240 CALL CHAR(130,"102828444
4444438")
250 CALL CHAR(131,"007886818
678")
260 CALL SCREEN(5)
270 T1=610
280 T2=610
290 CALL CHAR(136,"FFFFFFFFF
FFFFFFF")
300 CALL COLOR(14,16,16)
310 CALL COLOR(13,2,16)
320 CALL COLOR(12,2,16)
330 R=10
340 GOSUB 1460
350 R1=10
360 C=2
370 C1=2
380 CALL HCHAR(R,C,136,2)
390 C=C+1
400 M=120
410 M2=128
420 RANDOMIZE
430 A=(INT(2*RND)+1)*2
440 B=INT(10*RND)+1
450 ON B GOSUB 470,470,470,4
70,510,510,550,550,590,590
460 GOTO 420
470 IF C+A>30 THEN 630
480 CALL HCHAR(R,C,136,A)
490 C=C+A
500 RETURN
510 IF R+A>20 THEN 540
520 CALL VCHAR(R,C,136,A)
530 R=R+A
540 RETURN
550 IF R-A<2 THEN 580
560 CALL VCHAR(R-A+1,C,136,A
)
570 R=R-A
580 RETURN
590 IF C-A<3 THEN 620
600 CALL HCHAR(R,C-A+1,136,A
)
610 C=C-A
620 RETURN
630 CALL HCHAR(R,C,136)
640 C=C+1
650 IF C<31 THEN 630
660 R2=R
670 C2=C
680 CALL HCHAR(R1,C1,M)
690 CALL HCHAR(R2,C2,M2)
700 Y=Y+1+(Y=2)*2
710 IF Y=2 THEN 1020
720 CALL HCHAR(R1,C1,136)
730 ON M-119 GOTO 800,900,74
0,850
740 IF C1=31 THEN 950
750 CALL GCHAR(R1,C1+1,G)
760 IF G=32 THEN 850
770 C1=C1+1
780 M=120
790 GOTO 950
800 CALL GCHAR(R1-1,C1,G)
810 IF G=32 THEN 740
820 R1=R1-1
830 M=121
840 GOTO 950
850 CALL GCHAR(R1+1,C1,G)
860 IF G=32 THEN 900
870 R1=R1+1
880 M=122
890 GOTO 950
900 CALL GCHAR(R1,C1-1,G)
910 IF G=32 THEN 800
920 C1=C1-1
930 M=123
940 GOTO 950
950 CALL HCHAR(R1,C1,M)
960 IF (C1=31)*(C2=2)THEN 13
20
970 IF C1<31 THEN 700
980 T2=T2-10
990 CALL SOUND(50,T2,5)
1000 IF T2=110 THEN 1340
1010 GOTO 700
1020 CALL HCHAR(R2,C2,136)
```

```
1030 ON M2-127 GOTO 1040,120
0,1090,1150
1040 CALL GCHAR(R2+1,C2,G)
1050 IF G=32 THEN 1090
1060 R2=R2+1
1070 M2=129
1080 GOTO 1250
1090 IF C2=2 THEN 1250
1100 CALL GCHAR(R2,C2-1,G)
1110 IF G=32 THEN 1150
1120 C2=C2-1
1130 M2=128
1140 GOTO 1250
1150 CALL GCHAR(R2-1,C2,G)
1160 IF G=32 THEN 1200
1170 R2=R2-1
1180 M2=130
1190 GOTO 1250
1200 CALL GCHAR(R2,C2+1,G)
1210 IF G=32 THEN 1040
1220 C2=C2+1
1230 M2=131
1240 GOTO 1250
1250 CALL HCHAR(R2,C2,M2)
1260 IF (C2=2)*(C1=31)THEN 1
320
1270 IF C2>2 THEN 700
1290 CALL SOUND(50,T1,5)
1300 IF T1=110 THEN 1370
1310 GOTO 700
1320 CALL HCHAR(1,1,32,768)
1330 GOTO 330
1340 GOSUB 1460
1350 PRINT "THE CAT GOT THE
WHITE MOUSE": :
1360 GOTO 1390
1370 GOSUB 1460
1380 PRINT "THE CAT GOT THE
BLACK MOUSE": :
1390 PRINT "TO PLAY AGAIN, T
OUCH ANY KEY"
1400 CALL KEY(0,K,ST)
1410 IF ST<1 THEN 1400
1420 T1=610
1430 T2=610
1440 CALL HCHAR(1,1,32,768)
1450 GOTO 330
1460 CALL HCHAR(23,1,32,32)
1470 PRINT CHR$(120);(610-T1
)/10;TAB(20);CHR$(128);(610-
T2)/10
1480 RETURN
```

Did you know that ACCEPT AT(1,0) will accept a full line of 28 characters? Did you know that ACCEPT AT (R,0)SIZE(-28) and Enter will accept everything on row R? And did you know that ACCEPT N$ will accept a string of 255 characters?

MEMORY FULL

TI Home Computer.

Jim Peterson

AREA CONTACTS.

These are members who have the wish to have contact with other users in their area. Let us know if you wish to be included.

>Tony Bowden, (ELECTRONICS ENGINEER). 1 Little Heath, Hatfield Heath, BISHOPS STORTFORD, Herts, CM22 7EP.

>John Stocks, 11 Stonehill Rd, Roxwell, CHELMSFORD, CM1 4PF.

>Henry Clark,60 St Pauls Road, New England,PETERBOROUGH, Cambs. 0733 42642

>Harry Pridmore, 17 Jerrards Close, HONITON,Devon. 0404 41856

>John Carter, 16 Sherwood Ave, NORTHAMPTON. 0604 842760.

>Simon Pryce, 48 Mount Street, SHREWSBURY,Salop. 0743 67799. Interested in amateur radio

>John Bingham, Rygghagen 7B, 4070 Randaberg, Stavanger, NORWAY. 04-599228

>Stephen Meadows, Stonebrook, Old Forge Lane, Nutley,E.SUSSEX.TN22 3EL.

>Richard Speed, 18 The Spring, Burgess Hill, W.SUSSEX.

>George Hunt, 44 Sharphaw Ave, SKIPTON, N.YORKS. Skipton 5840.

>Stanley Dixon (FORTH & PASCAL INTEREST), Grange Park Road, LEEDS, LS8 3BB.

>Graham Hilton, 8 Sandwich Close, Saint Ives, CAMBRIDGE. 0480 65228.

>Richard Owen, 17 Highfield Ave, Litchard, Bridgend, Mid-Glam, SOUTH WALES.

>Alan Davey,(MODEMS), 88 Halcombe Estate,Chard, SOMERSET (RUNS BULLETIN BOARD SUNDAYS 10am-10pm.) TELEPHONE 04606 4511.(4A-BC NEWS).

>David Moerel, 6 Chyrose Road, St Day, Redruth, CORNWALL.

>MR.B. Sholanke, WELWYN GARDEN CITY, HERTS. Welwyn 27232.

>Andy Hopkinson, 16 Linden Wlak, Nth Baddesley, SOUTHAMPTON. 0703 732801.

>G.Broomfield, 42 Layton Rd,Parkstone,Poole, DORSET. 0202 722542.(Interested in DIY Hardware) >>>OTHER CONTACTS ARE THE AUTHORS OF ARTICLES PUBLISHED IN TI*MES MAGAZINE.

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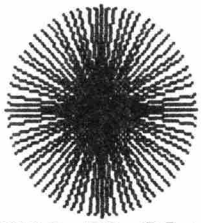
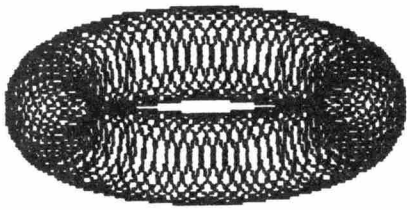
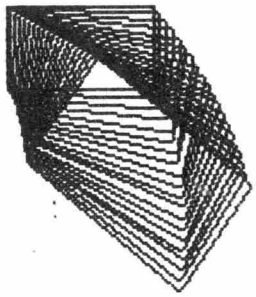
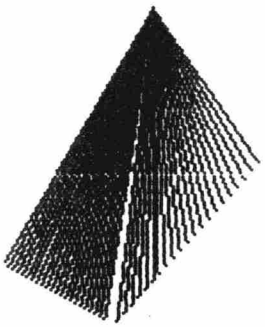
EXTENDED BASIC 2 PLUS



TEXAS TI 99/4A







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WAIT - allows you to set a delay.
MOVE - used to move contents within RAM.
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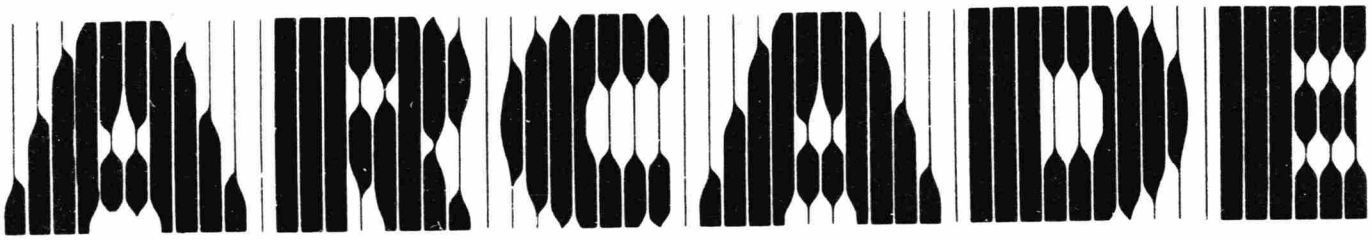

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NEW PRODUCTS DUE

MYARC COMPUTER....Bound to be very good and probably very late. Call me late February after I've been to see them.

MILLERS GRAMCRACKER.....£175.99

Price dependant on rate of exchange not going below 1.42. Arriving February

YOUR LETTERS

>TIM FREEMAN writes: "One annoying thing about the TI is that the ZERO is not slashed, so when I run a program or list it to the Printer I get a 'O'! If you add this line at the begining of your program

>90 CALL CHAR(48,"ØØ7C868A92A2C27C")

This gives you a very useful 'Ø' during program execution, to get the same CHARacter in a listing just add the above line as a direct command (ie without a line number) BEFORE you list your program." ED: Thanks for the tip, will be useful. Now can anyone help Tim he needs an old type metal cased modulator, if you want to sell one then telephone Tim Freeman on ALDERSHOT 334121 during normal working hours.

>TEXAS INSTRUMENTS have written to the group stating that you can still have your repairs carried out by the company. Copy of letter printed on page 12 of this issue.

>I.H.MOORE, of 34 Bucknalls Lane Earston, WATFORD, has produced a separate box with ESDX keys used for MULTIPLAN.The separate buttons allow faster movement around the screen including moving by windows. all members interested should contact him direct, enclosing SAE.

>TONY BOWDEN, of 1 Little Heath, Hatfield Heath, BISHOPS STORTFORD HERTS CM22 7EP. Writes: " As an electronics engineer I would like to offer my help where I can to members of TI99/4a Exchange TI99/4a and Expansion if anyone needs them."
ED: Tony is a frequent visitor to North America, so if you have a problem which requires contact in the States let him know.

>GRAHAM BALDWIN, RANDOM EYES fame has written to say that due to pressure of his own work, he will no longer be able to write future articles. however Graham will keep in touch. Let us all thank him for his excellent contributions in the past.

>IAN SWALES, BRUSSELS SPOUTS fame writes:" As to my lack of peripherals, I have been looking to expand my system for a long time now but it is with a heavy heart that I admit that I am typing this letter on my newly acquired QL. Despite already having the PE Box & 32k RAM I reckon it would cost me over £500 to get a Disk drive + controller, printer interface, TI Writer and Multiplan, whereas for the the new price of QL I have broadly the same capability.
The good news is that I am keeping my TI99/4a. ..... Using the QL makes me realise some of the TI's strong points and in particular I'm not sure this (QL) keyboard would stand up to the sort of pounding from my children that the 4a's had over the years..." ED: Thanks for your letter Ian, glad you have not deserted us entirely, expansion for the TI is getting much less expensive and it will last, anyway we all enjoyed your past articles hope you will keep us informed in the near future.

>D.Jackson, 9 Dorking Grove LIVERPOOL L15 6XR wants to get in touch with TIUSERS in the area.

>Neville Bosworth of Southampton writes: "I recently purchased a modem from Arcade Hardware to extend the capabilities of my trusty TI...I am writing to commend you to the services of ALAN DAVEY who runs the 4A/BC NEWS bulletin board..... Regardless of whether you have a modem or whether you need advice in purchasing & attaching a modem he is willing to help in any way he can.... I have found him to be an endless source of encouragement ..." ED: We agree, a NATIONAL U.K. network can be set up for all TI USERS provided we have the support. CALLING ALL TI99/4A MODEM USERS.... NEXT ISSUE OF TI*MES WILL FEATURE DATA NETWORKS VIA THE TI994a.

PLEASE REMEMBER IF YOU ARE WRITING TO ANY OTHER MEMBER OR A CONTRIBUTER TO THE MAGAZINE TO INCLUDE A STAMPED ADDRESSED ENVELOPE FOR YOUR REPLY.

MYARC DISK CARD REVIEW

BY ALLEN BURT

Whilst visiting the second TI-USERS Show at Brighton I had a rush of blood and purchased the MYARC Disk Controller card. I know this pleased Howard(Arcade Hardware) but it did not give the same amount of pleasure to either the Bank Manager or the wife. To be honest I was not too sure when I arrived home as to the reason why I needed it.

However it was soon installed in 'the box' and the TI card was carefully packed into the Myarc box ready for sale. One thing that did please me was that I now possesed a Disk Manager 2 module which would save my fingers a little bit of work -it does not require the same number of key strokes to get it moving as the earlier version.

The first action was obviously to test whether it would give me double density -on my SSSD disks !!! (it has been written in an earlier TIMES that there is a sense of wonder when the sector count goes beyond 359). This turned dissapointment when it stopped at 639 surely twice 360 made 720 who had pinched the other 80 sectors. Perhaps now is the time to open the manual and read the instructions -yes it does say that it is not true double density because it uses 16 sectors per track not 18 -one problem solved.

Now for the big test DOUBLE SIDED DOUBLE DENSITY (on SSSD disks !) set formatter working and watch -there it is 1279 on the sector count. I can now put almost the same amount of data on one disk that occupied four disks previously (only need to save on the purchase of 100 disks to pay for it !!).

BUILT IN SUBPROGRAMS

The next thing to try was the unique CALL subprograms included in the card.

CALL DIR( )

This allows the cataloguing of disks without using Disk Manager just enter Call Dir(1) in either of the basic modes and the contents of the disk in drive 1 will be listed on the screen without harming any program in the consul. The readout has more information than is given by Disk Manager -you are given the program size in bytes (This does not apply to files) in addition to the number of sectors used as shown below:

```
 DISKNAME = TIWRITERXB
USED = 190 AVAILABLE = 33
FILENAME SIZE TYPE P
--------------------------
CHARA1 9 PGM 2048
DPC 18 PGM 4106
EDITA1 33 PGM 8190
EDITA2 6 PGM 1046
 FORMA1 33 PGM 8190
 FORMA2 15 PGM 3342
 FUNNELDOC 51 D/V 80
 LOAD 25 PGM 5943
```

The listing cannot be dumped to printer unless there is a screen dump program held in the memory. But the controller can control up to FOUR drives ... one cannot have everything.

CALL ILR

This is similar to CALL INIT available with Editor /Assembler but can be used without special modules plugged into to the consul i.e in consul basic -but there must be an expanded memory fitted for it to clear. It can used in programs or in immediate mode.

CALL LR

This is equivalent to CALL LOAD but again works without the need of special modules and can be included in programs. When used in the Basic modes it will load a program file as if in Editor/Assembler mode.

CALL LLR

Equivalent to CALL LINK and operates as the other CALL subprograms.

These CALLS however do not like being used in multi-statement lines. Only the first Call is read !

MYARC DISK MANAGER

Although MYARC had supplied the DISK MANAGER II module with the card they had promised to supply an enhanced version on disk. Howard was constantly being told that it should arrive within the next couple of weeks. It finally arrived four months later -but it was worth the long wait.

The program is what should have been supplied by Texas in the first place. It permits single screen editing of the disk information plus many more useful features. The program will partially run with the TI-Card -it will not Format or Copy but the other features can be used.

The program can be loaded from Basic or Extended Basic when used with the MYARC Card or with the Editor/Assembler module with the TI-Card. The Title screen gives the following menu commands:

SETUP CATALOG EDIT XECUTE UTILITY GOODBYE

SETUP

Pressing 'S' will bring up the SETUP Screen and a new menu apears at the bottom. The commands are:

SAVE EXIT CHANGE FOREGROUND BACKGROUND

FOREGROUND/BACKGROUND

By pressing the 'B' key you can progress through the colour table in sequence changing the background colour The colour number is displayed at each change. Pressing 'F' will run through the same process for the foreground colours. You can have any combination of the sixteen colours you wish.

CHANGE

Pressing 'C' will allow you to change the system defaults for the printer and disk drives. You can setup each drive with a default condition ranging from Single-Sided Single-Density to Double-Sided Double Density. This is mainly used when formatting disks in the various drives.

SAVE

This command will allow you to save the new setup instructions to the disk.

EXIT

This command returns you to the main title screen.

CATALOGUE

Pressing 'C' will bring a response asking for the Drive number -default value of '1' -pressing enter or '1' will list the contents to screen of the disk in drive 1. If another drive is required it only requires the number to be pressed(i.e pressing '2' or '3' will immediatly read the disk in that drive).If there are a large number of files on the disk you can scroll using the Function or Control key with 'UP' and 'DOWN' keys in the normal way. Pressing 'C' again with allow you to catalogue another disk.

If a printout is needed then press "FUNCTION 'P'" will give a printout of the contents.

EDIT

If the 'E' key is pressed and there is a disk catalogue on the screen another menu appears at the bottom(if no catalogue is present you will be asked to enter the drive number to catalogue a disk.

New Menu:

COPY MOVE DELETE RENAME PROTECT UNPROTECT
VOLUME BACKUP SEE

All file utilities and disk name changes are handled on the one 'catalogue' screen.

COPY

Pressing 'C' will enter a "C" in the left hand field of the catalogue -any file with a "C" will be copied to another disk when the commands are executed later.

MOVE

This is similar to COPY but will DELETE the orginal file after copying

BACKUP

This command places a "C" against all the files in the catalogue thus making a copy of the whole disk.

When the copy commands are executed you are asked which drives you intend to use and the disk manager will then read both disks and tell you if there is sufficient room on the copy disk to hold the files you wish to copy -you are told the last file it can copy if there is not enough room left. It will only copy a complete file so you do not have a partially loaded file as in the case of the Disk Manager module.

The copy program reads about 90 sectors at a time and then writes to the copy disk.

RENAME

Pressing the 'R' key will place a blinking cursor on the file name -you then enter a valid name and press enter when complete.

VOLUME

This allows you to change the Disk Name without going to another screen.

PROTECT

Pressing the 'P' key will automatically place the cursor in the Right Hand field and enter a "P" before dropping to the next line where another "P" can be inserted or the 'arrow keys' will move to the next line if needed. Pressing a "U" will UNPROTECT a program or file in the same way.

SEE

This is probably one of the most useful commands in the menu. By pressing 'S' when the cursor is on a DIS/VAR file -the file is read a scrolled on the screen. It can be stopped by pressing the space bar and restarted in the same way. This gives an opportunity to check what is in the file without having to load TI-WRITER or EDITOR/ASSEMBLER to do it.

EXIT

This returns you to the main menu filed where you can select the **XECUTE** command by pressing 'X' and all the changes made during editing will be made to the disk.

If 'X' is not pressed then no changes will be made and you are free to select another of the main menu commands:

UTILITY

This command will give you the UTILITY menu of:

TESTS CLONE FORMAT LOAD/RUN RAMDISK EXIT

TESTS

These are the disk tests similar to those in the Disk Manager Module.

CLONE

This is another copy routine but this time it makes an exact copy of the main disk it will OVERWRITE anything left on the copy disk. This version does not copy the files in alphabetical sequence but in the exact sequence in which they exist on the main disk.

FORMAT

This allows you to prepare a disk in one of six formats:

Single Sided Single Density
Single Sided Double Density -16 sectors per track
Single Sided Double Density -18 sectors per track
PLUS Double Sided version of the above Densities

(This gives a storage capacity of between 90k and 360k per disk.)

The formatter also permits a choice of interlace patterns (the step interval used for numbering the sectors). It is possible to speed up the formatting process by selecting the pattern most suited to the format type. Experiments have shown that the savings can be considerable (almost 50%). Other tests have shown that the interlace also affects the time taken to load large programs. The result of these test will be the subject of another article at a later date.

Best Wishes

Allen

(A.D.Burt).

17,Wagtail Cl
TWYFORD
Reading
RG10 9ED

7 WAYS TO STORE PROGRAMS

A LOOK AT PROGRAMS by

R. A. Green

There are seven different ways to store programs in the TI 99/4A. In this article we will have a look at each of these seven forms and at how they are used.

Everyone is familiar with the form used by TI BASIC to store programs on cassette or disk. It's identified as "PROGRAM" in the disk catalog. It is created or stored by the BASIC SAVE command and loaded by the BASIC OLD command. This is the only way that TI BASIC uses to store your programs.

Extended BASIC can, and usually does, use the same form as TI BASIC to store programs. In fact, Extended BASIC can use TI BASIC programs. There are, however, two other forms that XB uses. Both these forms can only be used to store programs on disk.

If you have the 32K Memory Expansion, you can write an XB program which is too large to store in the usual format. XB will store these large programs in an "INTERNAL VARIABLE 254" file. The usual "SAVE" and "OLD" commands are used to store and load these programs.

The third form used by XB is the "merge format" stored in a "DISPLAY VARIABLE 163" file. This form is created when the "MERGE" option is specified on the "SAVE" command, and is loaded by the XB "MERGE" command. The beauty of merge format is that when it is loaded it does not necessarily overwrite the program in memory. The MERGE command does just that - it merges the new program (or program segment) with the program in memory according to the line numbers.

Now, we get to the good stuff, Assembler language programs. There are three forms for an assembler program: tagged object, compressed tagged object and memory image.

Tagged object is stored in a DISPLAY FIXED 80 file on disk only. All program data is in hexadecimal so that it can be editted by the E/A editor. Tagged object can be loaded via CALL LOAD in XB, option 3 on the E/A menu, option 1 on the MM menu or by CALL LOAD in TI BASIC when either the E/A or MM module is used. The program can be "absolute" or "relocatable". An absolute program must always be loaded at the same place in memory. A relocatable program can be loaded any place in memory. A tagged object program may have references to other programs or subroutines. The loader will resolve these external references, except for the XB loader.

Compressed tagged object is very nearly the same as tagged object except that the program data is stored as bytes rather than as hexadecimal digits. Compressed tagged object loads faster than regular tagged object as you would expect. The XB loader cannot load compressed object.

Tagged object, in either form, is produced by the Assembler when it assembles a source program.

The "memory image" form of assembler programs is the most compact and the fastest loading. It can be stored on cassette or disk. It is identified as PROGRAM in the disk catalog (just like a BASIC program). Memory image programs can be loaded by option 5 on the E/A menu or option 3 on the TI Writer menu (and I assume, by Multiplan, although I have never tried since I don't have Multiplan). It should be noted that there is one slight but important diference between how the E/A calls a memory image program and how TI Writer does. TI Writer blanks the screen just before calling the program and the E/A does not. This means the program must turn the screen back on or nothing will show. Memory image programs are created by a Utility program (one is provided on the E/A disk).

A PROGRAM file, containing an Assembler memory image or a BASIC program, can be read or written to any input/output device with a single I/O operation. This is one of the reasons they load so quickly.

There is a restriction on the size of an Assembler memory image

program of 2400 bytes (9216 decimal). However, the E/A and TI Writer modules will load multiple memory image files to make a program of any size. They use the convention that the file name of the second and following files is obtained by incrementing the last digit or letter of the previous file name. For example, the TI Writer editor consists of two memory image files: EDITA1 and EDITA2.

As a matter of interest, the ADVENTURE, Tunnels of Doom, Personal Recond Keeping, Statistics and Personal Report Generator modules use a memory image or PROGRAM file for their data bases. The fact that memory images can be saved or loaded with a single I/O operation makes them attractive for such uses.

A lot of the Assembler language games that are circulating around are in the memory image format so let's look closer at them. Assembler memory image files have a three word header followed by the data to be placed in memory. The three header words are:

(1) This word is a "flag". If it is not zero (i.e. FFFF) then this file is not the last in a multi-file program. For example, the flag word for EDITA1 is FFFF indicating that there is another file called EDITA2; the flag word in the EDITA2 file is 0000 indicating it is the last file and there is no EDITA3.
(2) This word is the length of the memory image in bytes, including the six byte header.
(3) This word is the CPU memory address where the memory image is to be loaded.

Execution of a memory image program always begins at the first byte of the first segment loaded.

Finally, the seventh form for programs. This form is created and loaded by EASY BUG of the Mini Memory Module. It can be written only to cassette and is a memory image, but is slightly different from the E/A memory image file. The EASY BUG memory image program can consist of only one segment. The header on the EASY BUG format is two words, as follows:

(1) This word is the CPU memory address at which the memory image is to be loaded.
(2) This word is the length of the memory data, not including the four header bytes.

If this whole thing is too complicated - maybe a table showing all the options will help.

FILE TYPE	CONTENTS	MODULE	DSK	CS
PROGRAM	BASIC Program	Console	YES	YES
PROGRAM	BASIC Program	XB	YES	YES
INTERNAL V 254	BASIC Program	XB	YES	NO
DISPLAY V 163	MERGE Program	XB	YES	NO
DISPLAY F 80	Tagged Object	XB	YES	NO
DISPLAY F 80	Tagged Object	E/A	YES	NO
DISPLAY F 80	Tagged Object	MM	YES	NO
DISPLAY F 80	Compressed Object	E/A	YES	NO
DISPLAY F 80	Compressed Object	MM	YES	NO
PROGRAM	E/A Memory Image	E/A	YES	YES
PROGRAM	E/A Memory Image	TIW	YES	YES
PROGRAM	MM Memory Image	MM	NO	YES

Thanks to The Ottawa TI99/4a Users Group Canada, for this article.

MULTI PROGRAMMED BASIC

by STEPHEN SHRAIBMAN

MULTI PROGRAMMED BASIC

I bet you didn't know that in TI BASIC (with E/A plugged in) you can have numerous programs in memmory at the same time.

By now you are probably asking "How?". Well its all to do with TI BASIC Operating System's use of the Free Memory pointer, how it decides where to load a program and how it knows if a program is in memeory.

After we learn all these titbits, we'll learn how to trick the computer to hold three programs on our demand AND save all three to one single disk file ready to run again.

Where Do We Start?

If we were a computer we would probably start at the first free space in memory. And thats just where we will begin our study of the TI.

In TI-BASIC the first free address in VDP RAM is 14295. The space from 14296 to 16383 is taken up by the disk operating system (DOS). This free memory marker is stored in the CPU RAM pad at address -31952 and at -31950. Why in both places? It has to do with how the TI can tell if a program is already in memory.

The TI stores the entire line number set in one place. It keeps track of the start of the Line Number Table (-31952) and the end of it (-31950). Whenever the user types RUN, LIST or SAVE the Operating System checks those two addresses. If they are equal then the Line Number Table is empty- there is no program present! Or at least thats what TI-BASIC thinks and gives you a honk and a "CAN'T DO THAT".

So What Does NEW Do

Now this might come as a shock to you but when you type NEW the Operating System simply (and only) blanks out the Line Number Table. It checks for the highest available memory (usually 14295) and places that at the bginning marker(-31952) and ending marker (-31950). The system does NOT erase your program from memory! So with the right values you can restore your program after NEW.

An Unforgetable Experience

As an illustration of how the Line Number Table pointers works, lets type in the following in TI-BASIC (with E/A plugged in):

First, in Command Mode type:

```
NEW
CALL INIT
CALL PEEK(-31952,A,B,C,D)
PRINT A;B;C;D
```

You should get the values:
55,215,55,215

This shows the Line Number Table is empty. If you LIST TI will honk and say CAN'T DO THAT.

Now enter the following short program:

(NOTE PLEASE: for all these programs EVERY byte counts so do not take short cuts such as skipping REMs as this will put the Line Number Table pointers off.)

```
100 CALL CLEAR
110 CALL SOUND(150,1400,0)
120 PRINT "I'M HERE!"
130 PRINT
140 STOP
```

Now lets check out the Line Number Table markers. In Command Mode type:

```
CALL PEEK(-31952 A,B,C,D)
PRINT A;B;C;D
```

You should get the values:
55,138,55,157

Now the computer knows that there is a program present and that its Line Number Table starts at 14218 and runs to 14237. If you type RUN the program will beep and announce its presence.

Now type NEW (don't worry). If you try to RUN or LIST your program you are told CAN'T DO THAT and chilled with TI's infamous honk.

But don't fret, just type:

```
CALL LOAD(-31952,55,138,55,157)
```

and then type RUN. See...
Now TI thinks there's a program again!

Just Put It Anywhere

There's nothing sacred about putting the program high up in the memory. In fact, you can put it anywhere you wish as long as you tell the TI where to find it. Lets try another short example:

1) Type NEW
2) In Command Mode type:

```
CALL LOAD(-31952,27,215,27,215)
```

3) Enter a short program:

```
100 CALL CLEAR
110 PRINT "I'M SHORT"
120 STOP
```

Now try saving this extremely short program to disk. Catalog it. What happens?

How Big Is It?

The TI SAVE command saves your program in "memory image" format. As the name suggest it saves your program byte for byte, exactly as it appears in the VDP, straight to disk. Also, the SAVE command ALWAYS starts at the top available memory no matter where the Line Number Table Starts.

This means in the above example the TI saved every byte from 16383 to 7100! Quite a few bytes for such a small prgram.

This may seem like an annoying flaw, but it is a great opportunity for TI-Hacking.

Stuffing The TI

Since the computer doesn't really care where you start the Line Number Table and since the system never really erases memory, just changes the table markers and since the TI can only keep its "eyes" on one program at a time we can use a few tricks to stick more than one program into VDP RAM at the same time. In fact, thats what we'll do:

1) Enter two programs into the VDP RAM area at two different locations.
2) Enter a third "Master" program at a third location.
3) Use the "Master" program to move to and from each of the other two programs on demand.
4) Save the entire mess to disk under one file name.

Example Programs

REMEMBER: every byte counts.

1) Turn the power off/on.
2) Select TI-BASIC with E/A in place.
3) Type NEW and CALL INIT.
4) Enter the following program:

```
100 REM *PROGRAM ONE*
110 REM
120 CALL CLEAR
130 CALL SCREEN(15)
140 CALL SOUND(150,1400,0)
150 PRINT TAB(9):"PROGRAM ONE"
160 FOR L=1 TO 10
170 PRINT
180 NEXT L
190 CALL LOAD(-31952,44,55,44,130)
200 STOP
```

5) Now, lets find the start and end of the Line Number Table for this program. Type in Command Mode:

```
CALL PEEK(-31952,A,B,C,D)
PRINT A;B;C;D
```

You should get these values:

55 9 55 52

If you didn't, check your listing carefully- there's probably and extra or missing character (like a space), etc. Just go back and edit the offending line, you don't have to retype the whole program.

6) Now lets trick the TI into thinking the program does not exist. Let's also set up a new area in VDP RAM for the second program. In command mode type:

```
CALL LOAD(-31931,50,215,50,215)
```

Just for kicks, type LIST...

Be sure you type these values and not some other ones! If you are not sure you typed the right ones use CALL PEEK at the same address to check those four important values.

If its OK, then we are ready to type our second program.

7) Now enter the following program (yes, start with line 100 again):

```
100 REM *PROGRAM TWO*
110 REM
120 CALL CLEAR
130 CALL SOUND(150,700,0)
140 PRINT TAB(9):"PROGRAM TWO"
150 FOR L=1 TO 10
160 PRINT
170 NEXT L
180 CALL LOAD(-31952,44,55,44,130)
190 STOP
```

8) After you have entered program #2, check for the current location of the Line Number Table:

```
CALL PEEK(-31952,A,B,C,D)
PRINT A;B;C;D
```

If there are no errors, you should get these values:

50 31 50 70

9) We are now ready to write the master program that will allow us to move from one program to the other.

First lets set up a new Line Number Table area:

```
CALL LOAD(-31952,45,215,45,215)
```

10) Enter our master program:

```
100 REM *MASTER PROGRAM*
110 REM
120 CALL CLEAR
130 CALL SOUND(150,110,0)
140 CALL SOUND(150,440,0)
150 CALL SOUND(150,220,0)
160 CALL SOUND(150,110,0)
170 REM
180 PRINT "MASTER PROGRAM"
190 PRINT "=============="
200 PRINT
210 PRINT
220 PRINT
230 INPUT "WHICH PROGRAM (1 OR 2)? ":P
240 IF (P<>1)*(P<>2) THEN 230 250 IF P=2 THEN 270
260 CALL LOAD(-31952,55,9,55,52)
270 CALL LOAD(-31952,50,31,50,70)
280 STOP
```

11) Check the location of the Line Number Table:

```
CALL PEEK(-31952,A,B,C,D)
PRINT A;B;C;D
```

You should see:

44,55,44,130

12) To save all this together as one file just type SAVE DSK1.MASTER (or whatever). All three programs will be saved to disk and will be available when you load this file next time.

The Critical Test

Now lets see if your programs run. Make sure your line number table is set to the MASTER program- CALL LOAD(-31952,44,55,44,130). Now type RUN.

You will be asked to select prgram one or two. Select program one.

When the master program signals it is *DONE* , type LIST. You should now be looking at a listing of PROGRAM ONE- not the MASTER!

Now type run again. After PROGRAM ONE is finished immediately type RUN. Yes you just ran the MASTER PROGRAM again!

If you are getting screen lockup, weird error messages like SYNTAX ERROR IN LINE 0, etc. then there is a mistake in the loads. The computer will blindly accept ANY values placed into address -31952 as valid Line Number Table markers. When you type LIST, your TI will try its best to "list" whatever the table points to.

So What Now?

There are quite a few possibilities for use of this TI quirk. If someone could figure out how to get these various programs to AUTO-RUN we'd have a TI-BASIC "CHAIN" command similar to the X-BASIC statement RUN "DSK1.FRED". Of course, you can store more meaningful programs than we have here. And it works in X-BASIC too!.

Retyped by Steven Shraibman from The Computer Voice, the official news letter of the Southern California Computer Group.

HOWARD WRITES AGAIN

by HOWARD GREENBERG

And first the news..... Well that's that dealt with!
Hints and tips. More discoveries in TI-Writer. Did you know that it's possible to print only certain lines of a file? When asked for device name, type in line XXX start line space and then XXX stop line, then device name.

Since it's the start of '86, I thought I'd list my top ten TI items of the year. These are personal, bear no represantation to value and are simply things that I've admired during 1985. Not in any particular order, here they are:

Shinwa CPA80 printer. The newer version of this one, it has a NLQ print, 100cps, and is fully Epson compatible. For £230.00 I think it's great value and a great printer.
Millers Explorer £24.95. For seasoned assembly programmers, it's their greatest aid. Very sophisticated and very comprehensive, it doesn't fall down in the one area most 3rd party software does, the documentation. The manual is a gem.
Q*Bert £24.95. A direct copy of the arcade game from Parker Brothers. Only its price lets it down, otherwise it's superb. I find it highly addictive.
Zork I £34.95. I'm no longer stocking this as the pirates have moved in, but it's the daddy of all the Infocom adventures. Very clever parser which allows text to be entered in an intelligent manner, with a massive plan to find your way around, the biggest adventure I've found.
Navarone Widget £39.95. A simple device whose usefulness can only be appreciated by ownership. Designed to save wear on the module slot, it can be used to examine modules as well.
Graphx £? I imagine Parco is as sick of having this pirated as I am of the Infocom games. This is by far the most comprehensive of the screen drawing programs with an almost Macintosh like enviroment. Facilities include the option to save pictures to disc and print them out. Very good and a great shame that it's being illicilty copied.
Myarc 128k Card. £230.00. A bit of an indulgence this, but a fabulous piece of kit. Anyone who seethes in frustration as they switch between Editor and Formatter with the TI-Writer, or the various options on the Editor/Assembler might be very interested in this item. The speed of recall is phenomenal. In addition, the card can also be used as a massive printer buffer. I found using one could speed up my letter writing by about a third.
Myarc Disc Controller. £185.00. This card has been reviewed elsewhere, but I'll just repeat and condense those opinions. The card can control up to four double sided double density disc drives. It also has additional call built into it which means that in some cases the Editor/Assembler isn't necessary. If you're contemplating buying a hundred discs for storage, then the Myarc card could just about pay for itself.
DM1000 £Nothing. A superb disc manager on disc as freeware. As well as doing everything the Disc Manager II does, it also does it more easily, so a whole screen of instructions can be presented instead of the to-ing and fro-ing that the DM II makes necessary.
COMPUTE! Books. £10.95 to £11.95. They're all good, but of particular usefulness is Beginners guide to assembly language. Written by Peter Lottrup (who did the never fear Assembly language won't byte series in 99'er), this is the best tutorial yet on the 9900 instruction set.

So that's my top ten of the year. Some of them have been around for longer, some are very new. I don't sell all of them so this isn't an advertising plug.

Howard Greenberg.....yawn

What's going to be new for 1986?
Well obviously, the greatest interest is being centered around Myarcs new computer, which seems to be outcompeting an Elephant in terms of gestation period. Specs are flying about, each of them changing with the subsequent telling, but it does look as though it's going to be a fine unit.

The other new item for 1986 is a very long running story that may by now reaching its conclusion. The Thorn-EMI saga goes on. I'd just about given up with the previous management there, but there has since been a management buy-out and the new team seemed receptive to the idea of selling me the rights to manufacture the games. The deal hasn't gone through yet, but in principle it has been agreed. Assuming all goes according to plan, I should own the games by late January. At that point it will take about six weeks to have them ready for re-sale. The intention is to have all three games on one disc selling at £35.00 to anywhere in the world. For three games of this quality, that's a very fair price. The games are Submarine Commander, River Rescue and Computer War. All three are of the very highest quality and I can only say it's a tragedy that it's taken so long to get this far. Even now it may not happen - keep your fingers crossed.
I shall be in the USA during the week February 10th to 18th so no orders will be processed during that period. If you must 'phone me during the period 19th to 24th February, could you please make it in the afternoon or evening as I'll be living in the wrong time zone. My main intention whilst in the USA is to buy a copy of Myarcs new computer and to have a lengthy assesment of it, both at Myarc (where they'll demonstrate all the clever bits) and here (where I'll discover the bits glossed over). Although I'd like to be going south to Texas and California, time and cost prohibits this, so please don't ask for one offs. Where I'll be going, I don't even know if they'll have TI99/4As.

When I first started writing this column, I was working in the amusement business servicing Juke Boxes and Video games that were in Pubs. To put it bluntly, I hated it but the pay was good. When the company I worked for went bust, I was forced to expand the part time business of adapting arcade joysticks for the TI99/4A (hence the name Arcade Hardware) to a full time business or join Maggies Army in the dole. Gradually, I've built the business up to the point where I can make a tolerable living. Anyone whose been to 211 Horton Rd will realise I haven't got rich doing this, but the point is, I love doing what I'm doing. Working in pubs, dealing with vandalism and abuse doesn't hold a candle to dealing with pleasant, intelligent and charming people I've met and spoken to during the period Arcade Hardware has been trading. I'm constantly facsinated at the wide variety of ages and professions too. From every scale from an airline pilot to a plumber, a refuse collector to a professional computer programmer. And age holds no barriers either. I've watched eight year olds hold their own with 60 year olds. Like most hobbies, the limitation on how deeply someone gets involved seems to be how much disposable income can be spent. But even within that, the ability to learn can compensate for a fair lack of modules/peripherals. Of course, there have been hiccoughs and a few bad eggs, both product wise and people wise. Like the Basic Conversion Kit or the man who got very upset at discovering that having cheated me once, I wasn't going to let him do it again. But for the rest, thank you for 1985 when I'm still going and most of the home computer business is in tatters. Thank you too for your time on the 'phone and many pleasant conversations, thank you for the letters which take time to write. Thank you also those who've shown me hospitality way beyond the normal requirements of a buyer/seller transaction. Thank you for your custom without which I'd be one of the three and a half million.

Lets do it again in 1986.

Howard

RAMBLES

by Stephen Shaw

Hello again. Good to meet so many of you at the show. And as always the clarion call goes out: If you don't like what is in RAMBLES, write and tell me what you want. As detailed as possible!!! After the deafening lack of response on Forth I gave a little warning in the last issue: it worked! Many of you have written asking for MORE forth so more there is. Thanks especially for the more detailed requests... they are most helpful.
And even if you like what you see in Rambles, comments, gossip, and requests are still very welcome. It is impossible to write to a vacuum!

MEMBERS DISK LIBRARY:
The number of disks available increases, and revisions continue to come in. The list is now so long I must ask for a blank disk and return post please, if you would like a copy of the current listing. It takes too long to print lists out! and paper is not THAT cheap...

If you do not have a disk system, please write to CLIVE for details of material available on cassette.

Newish items on disk include:
DISK MANAGER 1000 Vn 2.2, a general purpose disk manager including fast copy. Now includes a DV80 file reader, screen colour options, and can now handle disks with over 110 files on them! Excellent program.
TE3 Terminal Emulator. Revision 3.3 now in.
FAST TERM terminal emulator. Revision 1.13 now in.
MASS COPY fast disk copier. Version 3.25 now in.
SUPERBUG2 now in... the best of SBUG and DEBUG in one package, with debugs and enhancements. An excellent program which UK Customs insist is worth US$92! but yours for a lot less.
JP GRAPHICS(2 disks) a bit map drawing program which includes a LOGO turtle mode.
PR-BASE... a data base program limited to 350 records.
and lots lots more, including games, graphics, music.
ALL ONE PRICE: Three pounds per disk (plus 1.00 pp per order) or if you send blank disks, just one pound per disk (plus 1.00 pp per order). Send blank disk plus return pp for full list... its getting longer....
(Overseas extra: send two IRC for quote!)

I again find myself surrounded by material for this issue of RAMBLES, lots of new items to review, questions to be answered, gossip to pass on....

BIRMINGHAM was fun, thanks Clive Audrey, and everyone else. I travelled on the first train of the day and the last (through) train of the day, so the timing was just right... started the day with a very nice bacon buttie at a mere 50p from a transport caff near the Civic Hall. Did you spot the new products? I walked out with a TREASURE ISLAND module and an INFOCOM adventure.

To more serious business....
REVIEWS FIRST...

INFOCOM ADVENTURE: PLANETFALL
from Arcade Hardware.
I'm not a good adventure player havent been too happy with the usual two-word adventures seen so far. INFOCOM however allow a more wordy input, and provide a very wordy output - if you ask for copy to be printed you can quickly go through a box of paper!
PLANETFALL is a 'standard' level adventure, ideal for adult beginners. Even I have managed 27 points (out of 80) so far. There is ample room for 'adventuring' here, and some nice touches. Ever tried picking an activated robot up? Worth trying. And if all else fails, SMILE! The package is not cheap, but includes all the frills... well made box, colourful booklet, extraterrestrial post cards (ideal for post card collectors), personal diary, ID Card (ideal for credit card wallet...). The disk is a FLIPPY, which carries proprietory protection only. (Copy it with anything other than Disk Manager Module!). And if you should get stuck,all is not lost...
INFOCOM SUPPORT:
INVISICLUE HINT BOOKS are available in the UK for 7.45 inc pp from Software Express, 31 Stoneyhurst Rd., Erdington, BIRMINGHAM, tel 021 384 5080 for credit card order. These hint books are VERY clever. Lots of questions are posed... some of them are of no use at all and are there just to mislead you! For each question there are one, two or three blank boxes. If there is more than one answer, they are in increasing order of helpfulness: if you only need a very subtle hint thats all you get! To read the clues you run a special felt tip pen (supplied) over the paper and the clue is revealed. There is a separate folded plan included if you need it. A section of the book indicates how the points are accumulated, and suggests some things to try after you have scored 80 points, just for fun!
IF you like adventures, you can't live without the Infocom series. If you are not keen on adventures, take a look at a 'standard level' Infocom adventure, such as PLANETFALL (SF), ZORK I (classic underground adventure), ENCHANTER (magic), WITNESS (murder mystery) CUTTHROATS(a mercenery diver!), and of course if anarchy appeals, the HITCHHIKERS GUIDE.
The ease of copying ensures that some TI owners will choose the cheap (and illegal) way to obtain these

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products: but will INFOCOM continue to support our machine if you do? Will the UK importer be able to support us if you do? And the packaging is worth having.

THE STICK shaftless joystick.

Available for 13.99 inc pp from LIGHTWAVE, P O Box 23, Wallasey, Merseyside, L44 1EW.

Many moons ago a venerable shaftless joystick appeared called LE STICK, and it is still available from MAPLIN for 24.90. Both LE STICK and THE STICK are wired for Atari computers and require an adaptor for the TI99/4A. Both use gravity sensitive mercury switches to sense the orientation of the stick.

Shaftless operation means no shaft to break. Mercury switches have the disadvantages of SLOSHING if held in a trembling hand! or if operated slightly enthusiastically. THE STICK seems less liable to slosh than LE STICK. THE STICK has two very comfortable fire buttons. Use requires practice and a firm controlled grip! Maybe a little difficult for such games as MUNCHMAN but eminently suitable for POLE POSITION or TI INVADERS. The stick insists on a sensitive touch and can make for very relaxed play (or else!).

==========

TREASURE ISLAND is quite a rare module (try PARCO) and only just made it. It is the only one by DATA EAST to make it (the other, ANGLER DANGLER seems to have been lost in the crash). A well written game, by no means easy. You guide a little character along mountain paths up an island/mountain which is steadily scrolling downwards. NASTIES may throw things at you or dislodge you... you can throw rocks back at them too. CAVES transport you to exit at other caves, at random. The game insists that you pay steady and close attention at all times! and gets harder as you go along. A colour tv is not absolutely essential but recommended. As is this module. It is fun and it is different.

~~~~~~

Some members have suggested to me that they NEVER play games and have no interest in them. I am sorry about that... I came into computing as a confirmed games player! Games of course provide a good entry point for programmers, be it in basic or machine code or whatever. They also provide recreation and relaxation. I won't support the shoot-em-quick variety of game, although they do have their place (TI Invaders is a very good 2nd generation module). But I do question a decision to put games to one side and ignore them! Thats how I feel!

''''''
~~~~~~

(...from previous page...)
SPELL1 is a SPELLING CHECKER for TI WRITER. This machine code program reads your DV80 files and compares each word to a dictionary. The dictionary is held in RAM and is limited therefore in size, about 2000 words possible. The dictionary is held in a DV80 files which is read into memory first - takes a while to do.
A sample dictionary is supplied but you can easily form your own, either by using TI WRITER, or let the SPELL1 program build up a custom dictionary as it scans your work. You can of course have several dictionary files, so one for each specialist purpose is possible.
Words which are in the dictionary are passed. If a word is not in the dictionary you have three choices... to add the word to the dictionary (subsequently your dictionary file is updated), to accept the word in all further occurrences in this file but not to bother saving it, or to object to it. If corrections are required, the LINE NUMBER the word is on is reported together with the word count on the line. This information can be logged if you wish.
Speed of checking depends on how adequate the dictionary is (or how many errors you/TI Writer have made. Essentially is is quite fast. You do however need to make your corrections by reloading the TIW Editor and loading the text file. All alphabetical characters are treated as capitals... thus there is no checking for capitals in the wrong place! Anything other than A to Z is treated as a blank space. Thus RS232 is considered to be RS.
Going through a fairly large part of RAMBLES created a dictionary of 1200 words. Perhaps a little arduous to put EVERY text file through, but a useful utility.
SORT1 is a disk based sorting program. There may be lots of sorting routines around, but can they really sort ANYTHING? SORT1 will sort any file on up to 8 keys. Files may be internal or display, fixed or variable, any length.
You do not need to tell SORT1 what type of file you are sorting: it reads the disk directory itself! Your only inputs are the file names and key positions.
The sorted file is placed on disk in exactly the same format as the original file, but for sorting purposes a third FIXED file is created. The limitation on size is set by your disk system: disk size and number of drives. Sorting 1200 words into order took about eight minutes: a lot faster than PRK could have managed. Two useful and powerful utilities at a very reasonable price. Well recommended.

==========

LOGO:

As part of the User Disk Library I now have what seems to be the complete world collection of PD TI Logo material on disk: eight disks from the Young Peoples Logo Association. And very interesting they are too. The shortcomings of LOGO in regard to memory management (and in particular file transfers) are apparent with what seems to be a lot of duplication (TI LOGO has no word such as NEW to clear procedures from memory).

-------> continued ----->

Much of the material is from schools, and it is interesting to see the various attempts at drawing a heart using turtle graphics. TEST: Using Logo (or Forth) draw a heart using bit map graphics. The heart is to be drawn by a PROGRAM. Try it!
The disks are available at usual costs but if you want them all then I can offer a lower price (see full list for details).
What I found very interesting was to compare these LOGO materials with the seven FORTH disks I have from the Milwaukee group... the Forth material may be a little more advanced but by and large FORTH seems to be finding the same uses by its adult owners as LOGO with its younger owners. BOTH languages are for exploration, and creation of your very own language!

~~~~~~

IS the TI99/4A the most accurate computer? The BBC, the C64 and the Apple 2 are more accurate in the following calculation:
Y=X-X/255*5 (range 1 to 100 step 1)
The TI can show an error of 1E-12, while the others are totally accurate!! For every other accuracy test the TI does win though...

!!!

No complaints about the small print in the last RAMBLES so we are going to use the double column format again. It does let me fit a bit more in! Thanks again to our friends in the LA group for the program to do it.
And thanks to one of their members, Ray Kazmer, who despite some very trying personal circumstances, has set out to find as many as possible of the Scott Forsman educational modules as he can. READING FUN has arrived, and I am immensely impressed.

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FREEWARE....

Quite a few of the programs in the User Disk Library are distributed as FREEWARE: the authors ask that if you use and enjoy the program, you send them a little something. It appears most folk dont. Less than 2% of KNOWN users send anything, and the authors are not getting rich! Some of the programs represent MANY hours work. The monies paid to me cover handling costs and provide a little something to help obtain new and revised programs. Unless extra is sent and specified as being for the author, they receive nothing.
They are very friendly people, and really like to hear from TI owners using their programs. If you are using FREEWARE and have not sent any donations, today is the best day to do it. Or why not drop a line to the author to thank them for their program, but:
i. Sorry I am penniless and can't afford to send anything or
ii.I am tight-fisted and miserly and if you dont write anything else I wont miss it.

~~~~~~

PIRACY....
From a fairly dependable source comes news that the authors of a 3D TENNIS program for the TI have become aware that their submission to TI for module publication - sat on by TI for 12 months before they pulled out - is in fairly free circulation. I am given to understand that they are taking out a global legal action against TI and any distributors of the program they can nab.
It is a pity that so much excellent material went into TI for module publication, and was sat on. However as TI never bought it, the copyright remains with the authors. Don't be too surprised if they show no further interest in supporting our machine... and don't be too surprised if they get upset if people copy their programs!
==========
The same source indicates that there have been complaints of mail fraud against an organisation called TI99/4A National Assistance Group... they have had one or two full page ads in MICROpendium recently. I gather some of their offerings are Freeware or Public Domain items... my recommendation has to be NOT to send funds to them.
Similarly, a major US dealer, taking many pages of ads in MICROpendium, and publishing their own MINI MAG 99, TEX-COMP, who you may recall upset a few folk with a not-quite-a-new computer compatible (a 4A in an IBM case) have caused even more upset by selling FREEWARE item DM1000 with the FREEWARE details removed and their own name inserted. Naughty.
Jim Peterson reports that NATIONAL NINTY NINER who cannot spell and cause SPELL1 to chuck their name out... have lost their volunteer printer (they told me delay was due to holidays...). They have also not printed last two articles Jim submitted. Treat with care.
More gossip... SUPER 99 MONTHLY was born with a loss, as a full page ad paid for and to appear in ENTHUSIAST 99 never appeared when the IUG busted, and of course the money was lost. The magazine continues...
Do you like a good gossip? A good buy then would be THE ORPHAN CHRONICLES by Ron Albright, published by Millers Graphics, and available for US$15 including post and packing, or ask Howard for a price. This reveals all about the birth and demise of YOUR computer, as well as some nasty things about the IUG.
::
Want to input a string from the keyboard? What is the maximum length you can input in one go?
Try INPUT A$... how long?
Now try ACCEPT A$ (ExBas)... how long?
And while ACCEPT AT will normally halt at the end of the line, you can drop through a little hole... try
ACCEPT AT(5,8)VALIDATE(UALPHA):B$(0++0)
How long? You will find the computer does not actually check AT ALL! But it is wise to restrict entry below 255 characters! The VALIDATE clause is essential here.
********** DISK EFFICIENCY...
The 3rd party disk controllers give you a little more control of how a disk is initiallised than TI did.... for you non-3rd party owners, here is what you (and I) are missing...
The TI DOS does not care precisely how a disk is initiallised: all that is required is that the tracks and sectors are laid down and marked when the disk is initiallised.
There are two factors: Interlace and Skew. Interlace is the ORDER in which the sectors are laid down on each track. The TI Disk Manager Module does NOT lay them down sequentially, but interlaces them. SKEW is how one track compares to one adjacent to it: is the first sector next to the others first sector or a quarter revolution away (and so on).
The particular set up TI chose was BEST for program format files, but for DF80 files, you can increase reading speed by perhaps 15% by using a different disk format: however in so doing you reduce the reading speed for PROGRAM files by 40 to 50% !!! And remember: your TI doesn't care WHAT the format is!
Information courtesy Richard Blanden.
==========
DATA FLEX SCREEN DUMP as sold by ARCADE HARDWARE... the OFF SET choice when using the UTILITIES program: OPTION 1 is for the PERSONAL REPORT GENERATOR MODULE only. Thought you'd like to know. Nobody tells us do they!!!
::
STAINLESS SOFTWARE is no more. In the THREE month period Nov 84 to Jan 85, the best selling title sold 33 copies. In the FOUR month period June-Sept 1985 the best seller could manage only 4 copies. Losses for the year WOULD have bought me a double sided disk drive, a gram cracker, a 128k card and an ExBas Vn4. The money having gone, I don't have them! It was however nice to play some role in supporting the TI in the UK, and hopefully have brought some happiness to some owners!
on to brighter things.....
I wrote a THIRD letter to TI (USA) on 1st October 1985, again asking for consent to copy their now hard to get tape and disk lines. I offered to pay royalties - no looking for handouts here! AND STILL WAITING FOR A RESPONSE!!

MAGAZINE REVIEW TIME....
CLUBLINE-99:
Private subscriptions not accepted.
Jan 85: Source code for disk initialisation routine which I shall add to one of the User Library disks plus object code. MAY handle 80 track DD : I don't have a DD controller OR drive so I can't test it. And a FORTH speech utility which did not work.
NOV85: A disk drive article MAINLY about the Commodore 1541! which seems to qualify as the worst value for money.... the MPI drives TI supplied appear to last twenty times longer!
This is a very odd publication: not available on direct sub, and copyright is claimed. Not quite sure if I like the approach that much.....

* 2022: Yes B$(0++0) is correct above.
If you then PRINT B$(0) it has a max of
42 characters even if you input 100 chars...

LA Topics from the LA group:
SEPT 85: Comment on Freeware payments (a continuing topic!) and in Jim Petersons Tips from the Tiger Cub a puzzle.
Type in this program EXACTLY LIKE THIS with all these words and spaces:

```
100 CALL CLEAR
110 LINPUT "WANT ME TO STOP? (YES/NO)":W$
120 IF W$="YES" THEN STOP ELSE 110
```

Does this program work as you expect it to?
Why/why not!
OCT 85: From the San Antonio group an Editor Assembler tip: when Assembling, the OPTIONS input also allows T for TEXT (eg with List). Try it.
NOV 85: Ad for the Orphan Chronicles mentioned elsewhere in Rambles, and for TRAVelER a disk based magazine by Barry Traver: I sent off my money to Barry by AIRMAIL on 7th October. As at December 1st, no response. There may be a post script on this later in RAMBLES but if not, you send Barry money at your own considerable risk!

NATIONAL NINTY NINER (it is THEY who cannot spell not me!)
Sub US$22 (presumably sea mail)
The 99ers Association, 3535 So H St #93, BAKERSFIELD, Ca, USA, 93304.
Oct 84: Articles on CP-M Card, CorComp disk controller, Pascal notes, Review of TI RUNNER by John Phillips (who says it is excellent on a 99/8).
AUG 85: Total 13 pages editorial plus 1 page index and two pages of Tips from the Tigercub. Articles on Morning Star 128k ram card, Pascal and CP/M.
[publish 10 issues a year. Not recommended due to delays in responding to enquiries].

DO YOU HAVE HOUSEHOLD BUDGET MANAGEMENT MODULE AND A PRINTER?????
For some reason TI did not supply a PRINT option with the module, but FREEWARE to the rescue: a Forth program, supplied to load from Ed/As option 3, is available from:
Bob Lawson, 16223 Mill Point Drive, Houston, Texas, USA, 77059
Bob asks for a contribution to costs... if you want it by airmail, US$15 would be reasonable. His program allows various print formats including to disk for future use with TI Writer.
!!
SUPER 99 MONTHLY
US$26.50 by air. US$16 by surface.
Bytemaster Computer Services,
171 Mustang Street, Sulphur, LA, USA, 70663
12 issues per year, no ads, 16 pages. All original.
AUG 85... which arrived after the Sept issue, such are the vagaries of surface mail! More on converting DF80 files to Multiplan SYLK files (May 85 issue needed). Two Multiplan spreads for Stats work. and a SUPERB article by Howie Rosenburg on FORTH programming
-----> continued ----->
standards. SHOULD BE ESSENTIAL READING FOR ALL FORTH PROGRAMMERS. This issue is available alone for US$1.50 from Bytemaster.
I also have a Forth disk by Howie, called FORTH DOODLES, well worth looking at. If you have Forth, read this article!!! (Sorry, copyright material, CAN'T COPY).
SEPT 85... How to fit a load interrupt switch to your speech synthesiser, the source code for an ExBas utility giving a 40 column display and a 40 column DISPLAY AT. Myarc 128k hints and tips. Review of FastTerm. Notes on Multiplan External Copy and External List.

!!
MICROpendium...
US$21.50 surface, US$35 by air.
P O Box 1343, Round Rock, Tx, USA, 78680

Sept 85... If you have Advanced Diagnostics by Miller, remember that FCTN 7 is active and provided for your help! Myarc 128k card review. A simple scroll down routine (in this issue of RAMBLES somewhere!), and a review of ASGARDS GRAPHX COMPANION, a double sided disk for only US$7 ... which I sent for on 24th October 1985 and arrived 7th December...... more below....
Oct 85... Assembler Tutorial Part 1, a tiny calender program (prints tiny calendars!).

!!

ASGARD SOFTWARE: GRAPHX COMPANION VOLUME ONE
US$7 PLUS OVERSEAS POST. (I sent US$10).

A flippy disk with one side of GRAPHX screens and one side of "clip art": various fonts, textures, small pics.
From:
Asgard Software, POB 10306, Rockville,
MD USA 20850
The disk arrived by sea mail in an ordinary thin white envelope with no stiffener or padding. I understand that in domestic US mails this results in a loss of 20% of disks sent, and it seems to cost less to send replacements than to use adequate packing. Personally I'd prefer to pay a little more and receive a safely packaged disk! However...
The documentation I received was a little less than that quoted in the MICROpendium review: M. received four pages: I got just one sheet printed both sides! My documentation failed to mention three files containing computer logos (Commodore, IBM, TI, Apple) and Computer Flow Chart Symbols.
One of the fonts was incomplete with four letters missing and an untidy split between F and G.
Thats all the grouses out of the way. The fonts are good (10 altogether) and include an inverse and a shadowed version of the file CALPHA4 on the original GRAPHX disk. One font is the same as the 64 column character set in TI Forth. [continued overleaf->]

Clipart includes very neat sketches of a TI Console and PEB, and various bits and pieces. The full pictures give little hints on what you can do with GRAPHX.
For US$7 you receive quite a lot of material, which you can use in your own graphics... ideal for poster making, especially if you have access to a copying machine with flexible reduction and enlargement facilities. Not quite as neat as Letraset but far more powerful.
Volume One has been so well received that already Volume Two has been brought out, and my US$10 is already on its way. One of the pictures in Volume Two is by Ron Albright!!!!
Asgard also produce a Tunnels of Doom Editor program for US$20, a Schedule Manager for US$20 and a Disk Data Base, said to be capable of handling 12000 files (if you have DSDD disks) for US$15.

AND talking of GRAPHX, I also have a disk from AMNION with GRAPHX screen dumps on it (Ref B13).
Do you have GRAPHX? Created any fonts, pictures or anything? Care to share your creations? Send them in on disk! and we can have a bigger library of graphics!
Would you like to see a page of GRAPHX creations in TI*MES? If so please write and tell me. Preference given to works by our own members of course!

I also have just in more disks containing material downloaded from various US Bulletin Board systems... downloaded by Dr Ron Albright to encourage US owners to buy modems! Total of seven disks with assorted material. Even the message sections are of interest... and there is also some technical material there which you are unlikely to see printed anywhere....

Mr M G Poskitt has written mentioning console lock outs when RESEQUENCING long programs....
When the computer resequences, lets say it changes line 3000 to line 100... it then has to go through the program and change every reference to 3000 to 100... and keep track of where it is. This requires a little memory. If you have a very large program there may not be enough room for the housekeeping work to be done, result... a hung up console.

Can you have machine code without disks... certainly. The only requirement is that you provide some RAM for it to go in, such as Mini Memory or a 32k ram.
Many machine code programs assume disk use, and use files on disk. Apart from some fairly trivial utilities, it seems that machine code can best be used for games if you do not have a disk system... but there are very few public domain games around, and nobody issuing machine code games on tape!

.... article continued ---->

The choices available:
EX BAS+32k: An XB program can be made up of CALL LOADs which insert the machine code program into the 32k ram, and then run it. I have transferred some of the New Horizons group utilities into this format and forwarded them to Clive for distribution. The only significant restriction here is i) the time that XB takes to CALL LOAD that many times and ii) the limited amount of memory available using a cassette and what is really an inefficient loading method.
MINI MEMORY: Using the Easy Bug option you can load quite long PROGRAM format tapes into memory, the limitation being that you must split larger programs up into 4k segments. Any program that runs with Editor Assembler module could be supplied on tape to run with this selection (provided there is no disk access involved of course).
EDITOR ASSEMBLER: Option 5 "run program file" allows you to load a machine code program from tape in units of 8k. If the source code is available, Ed/As allows a program to be saved to tape too, using the SAVE utility. Another way to transfer programs to tape would be to write a utility to transfer them from disk to tape: not yet available but keep tuned...
EXTENDED BASIC+32K again... and of course it is also possible to write a special loader for XB to load machine code programs from tape. Not yet written, stay tuned...
and equally, MINI MEMORY can have a special tape loader written for it. I have supplied Clive with a cassette version of FORTH for distribution with one such loader.

Quite a few options: and none of them really supported. Trouble is, the number of TI owners buying software who dont have disk drives is infinitesimal! I know there are a lot of TI owners without drives... but how much have they collectivey spent on software in the last year? Bear in mind that almost all TI owners in the USA have disk drives.

Work is being carried out both on writing m/c loaders and on transferring programs in machine code from disk to tape... and there may even be further news on this topic later in Rambles. (Latest news is not encouraging...).

Yes it is POSSIBLE to load machine code from tape... the current problem is finding the machine code to load...

CAN YOU LIST ASSEMBLY PROGRAMS...
Yes of course.Just peek every location and print the number there. That is all machine code is: numbers. There are disassemblers available which transfer the machine code back to nearly the original source code... take another look at TI*MES issue 9, page 10.

*2022: There is now a tape game available in assembly that requires NO extras.

Mr E J Stocks asks about an entry in the Mini Memory Manual...
"BLWP @VMBR Equates VMBR to >6030"
What does this mean?
Using the Line by line assembler you are limited to two letter labels and cannot use VMBR - you must use an equate.
However... if you write a program using the EDITOR/ASSEMBLER, you may use VMBR and YOU DO NOT NEED EQUATES. When the assembled code is read by mini memory it automatically does the equate to >6030.
Therefore machine code programmers can produce one source code secure in the knowledge that it will load with Ed/As AND MiniMem. There is absolutely no need to produce special source code with mini mem equates if you use Editor/ Assembler!

Also in the mini memory manual, we are told that the code for CIF is >23. This is wrong (page 46 refers). The XML routine code for CIF is 72. Hence DATA >7200. This quite serious error seems never to have been corrected by TI, and the source of the error is not too clear!
!!!
News of new products from TIGERCUB: Volume Two of both the collected HINTS TIPS disk, and of NUTS and BOLTS. The Hints and Tips disk is a collection of those little programs and tips which appear in TIPS FROM THE TIGERCUB and are the answer to people too busy to key them all in!
Volume One of the Tips disk is from Tips No's 1 to 14, and Disk Number 2 is from Tips 15 to 24. The NUTS AND BOLTS disks are collections of 100 and 108 subprograms to put into your own XB programs... instead of programming something already done, just MERGE the appropriate file(s) into your program.
Perhaps you could write them all yourself... if you had the time! Perhaps your programs lack polish due to the absence of such a collection! Well worth it.
Prices (no clue as to postage!):
Tips 1: $15 Tips 2:$15 Tips 1 and 2: $27
Nuts & Bolts 1: $20 Nuts and Bolts 2: $20
Nuts and Bolts 1 & 2 US$37.
I have all four disks and have previously mentioned Nuts and Bolts 1. How on earth do you review briefly a disk with 108 subprograms, with documentation spreading over 10 sides!! NB2 does have some really good subprograms, some which attracted my attention are CALL QUICKCOLOR to (instantly?) change the foreground and background colours of every character set. There are more character fonts, and display utilities.
Do you ever want to GOSUB N? Well... why not CALL GOSUB(N) instead! A full review would take up all this issue of TI*MES... why not just buy a copy and see for yourself! If you ever write programs in XB you'll find plenty you like.
Jim has also brought out a number of "disk collections" containing five or six TIGERCUB programs and then filled with public domain material, each disk at $12.

By David Enterline (is that real!) of Ohio, taken from MICROpendium, September 1985:

```
100 REM SCROLL DOWN
110 REM IN EXTENDED BASIC
120 REM 32K RAM REQUIRED
130 CALL INIT
140 CALL LOAD(8196,63,248)
150 CALL LOAD(16376,83,67,82
,76,68,78,48,0)
160 CALL LOAD(12288,2,224,13
1,224,4,192,2,1,37,20,2,2,2,
224,4,32,32,44)
170 CALL LOAD(12306,2,1,36,2
44,2,2,3,0,4,32,32,36,4,91)
180 FOR C=9460 TO 9492
190 CALL LOAD(C,128)
200 NEXT C
210 END
```

and a sample of use:

```
210 CALL CLEAR
220 PRINT "*[TEST]*"
230 FOR UP=1 TO 20 :: PRINT
240 NEXT UP
250 FOR DOWN=1 TO 20
260 CALL LINK("SCRLDN")
270 NEXT DOWN
280 GOTO 230
```

You will quickly find the limitations of this little routine, but I think you may be able to find a use for it somewhere!!!

==========

Do you have a typewriter? Do you ever clean it? Astonishing how those little metal characters get clogged up with something or other....

Do you have a dot matrix printer ? Ever clean it? Wonder whether the little impact wires get clogged with dried ink or paper dust?

At last I have found a product which maintains my Epson dot matrix printer, ensuring that those little wires stay loose AND happy! The product is by PerfectData, who do a whole range of computer products.
The following details are from the Winter ACS catalogue... goods may be available elsewhere! All prices below INCLUDE post and packing but EXCLUDE VAT:

UNIVERSAL PRINT HEAD CLEANER. Cat No.70-13-47. £8.90
(cleaning fibre sheets and cleaning fluid)

PRINTER CARE KIT. Cat No.70.13.30. £15.90
(above plus platten cleaner and conditioner and plastic cleanser)

.....continued....>

PerfectData Anti Static Kit £7.90 or two for £11.60
Computer Cleaning Kit: cleaning disks and solution, anti static spray,screen cleaner,plastic cleaner, platen conditioner and cleaner, and printer cleaning fabric and solution.£26.95!
Maintenance Kit: Disk, screen and plastic cleaners.£20.90
Disk Kit: Cleaning disks and solution. £13.70
Video Kit: screen cleanser. £9.50
They also do golf ball (printer!) and printwheel kits.
Write:
Action Computer Supplies
HA0 1BR
Access and Visa OK.
::::::::::::::::::::::::::::::

In the UK you are allowed to listen to BROADCAST radio transmissions without a licence. Listen to anything else by accident and you should not talk about it! I have one of those 170,000 transistor radios which I use to listen to broadast transmissions... and so many of those are 'out of band' (including the BBC!) you have to scan around...
Ever wonder about those radio (wireless) telephones now selling in great profusion? The HANDSET transmits around 47Mhz (public information, its in a book on sale at HMSO). The BASE however...
Lets put it this way... the frequency chosen for the more powerful base transmitter is such that if you make a call around 6pm in Winter, in theory. despite the low power, you may be picked up in Iran.... The band is quite narrow and in practice few frequencies are used : is it possible to use these in London? No coding is used at all, just ordinary amplitude modulation.
A technically minded 12 yr old could modify the domestic tranny to pick these up in about five minutes with no tools required....
CARE if you have a wireless telephone: you may be speaking to the world (yes, the base station does transmit both sides of the conversation, as well as the pulsed number you dial!)

```
XXXXX  XXXXX  XXXX   XXXXX  X   X
X      X   X  X   X    X    X   X
XXX    X   X  X   X    X    XXXXX
X      X   X  XXXX     X    X   X
X      X   X  X  X     X    X   X
X      XXXXX  X   X    X    X   X
```

HOW DO YOU ENTER FROM THE KEYBOARD?
Try using QUERY... for instance:

```
: TEST QUERY MYSELF ;
```

If you run this word it will ask you to input something, then ask you again, and so on till you get tired of it. We have not inserted any means of escape so you will have to switch off. This is better:

```
: TEST QUERY INTERPRET MYSELF ;
```

Now the computer will look at the word you type in when the cursor flashes and treat that word as a FORTH word to be executed: continued...>

Try typing in BEEP (if you have it loaded) or to fall out of the loop, ABORT. What happens if you type in an undefined word? Try it!

Another useful word is KEY which is the equivalent of CALL KEY... but waits for a key to be pressed, then the key value appears on the stack for you to look at and perhaps use (or DROP). Try:

```
: TEST KEY EMIT MYSELF ;
```

which will again form an endless loop!
A closer equivalent to CALL KEY is one which scans the keyboard and moves on, leaving a value of 0 if no key is pressed:

```
: TEST ?KEY IF EMIT MYSELF ELSE DROP MYSELF ENDIF ;
```

Lets go back to that endless loop we started with... why not test for CLEAR (Break)? Try:

```
: TEST KEY ?TERMINAL IF ABORT ELSE EMIT MYSELF ENDIF ;
```

Thats a start on using the keyboard to inter-react with a Forth program!

Now what about those control structures? Not very different to Basic, so lets have a look:

IF....ELSE...ENDIF is used above. The word IF looks at the value on the top of the stack and if it is not zero, the words between IF and ELSE are used and then execution passes to whatever is past ENDIF. If there IS a value on the stack, then the words between IF and ELSE are ignored and the computer performs the words between ELSE and ENDIF.
In both cases, the value on the top of the stack is removed.

Somewhat simpler is IF...ENDIF, which tests the value on the top of the stack: if it is not zero, the words between IF and ENDIF are executed, otherwise they are ignored.

If you do not like the word ENDIF you may use the word THEN : they are interchangeable. eg instead of IF...ENDIF, use IF....THEN

The word MYSELF used above merely repeats the word calling it, e.g. TEST

Take a look at the TEST above using ?KEY. The basic equivalent is:

```
10 CALL KEY(0,K,S)
20 IF S=0 THEN 10 ELSE PRINT CHR$(K) :: GOTO 10
```

How about those useful FOR...NEXT loops we always see in BASIC?
Well, in Forth we have one important change: you can only use two variables, called I and J. Lets compare Basic to Forth... note that I and J are NOT interchangeable. J is only used when two loops are nested and is the OUTER loop counter!

continued from previous page...

```
FOR I=1 TO 20
PRINT "TI*MES"
NEXT I
```

is:

```
: TEST 21 1 DO ." TI*MES" CR LOOP ;
```

Note that 20 has to be 20+1=21 here!

A little more difficulty then:

```
FOR I=4 TO 16
PRINT I
NEXT I
```

becomes:

```
: TEST 17 4 DO I 48 + EMIT CR LOOP ;
```

Assuming we are in DECIMAL base!
We have to add 48 to I to obtain the ASCII of the character we wish to print.. the ASCI of number 1 is 49! The I places the counter value on the stack, then we add the 48... ok?

Now let's get really tricky and use something else...

```
FOR I=5 TO 21 STEP 4
PRINT "STEP"
NEXT I
```

is:

```
: TEST 22 5 DO ." STEP" CR 4 +LOOP ;
```

We have used +LOOP here, with the STEP immediately in front of it.

Nested loops? No problem.

```
FOR J=1 TO 6
FOR I=4 TO 12
PRINT J+I
NEXT I
NEXT J
```

```
: TEST 7 1 DO 13 4 DO I J + .  CR LOOP LOOP ;
```

and if you can follow THAT you are well on the way to understanding Forth control!

Oh yes.... if you really dont like using I, you can use R instead, 'cos again they are completely interchangeable....

If you would like more along these lines, please write in and tell me! If you have a BASIC construct you would like an equivalent of, or just want to see how a Forth word can be used, WRITE!!!

And do take a look at the Forth disks I can supply: seeing a language in use is half the battle!

WHAT NUMBERS DO YOU USE WITH SYSTEM?
The answer to this is on your Forth disk, on Screen 33. Strange but true, CLEAR SCREEN is NOT a resident operation in TI FORTH, if you fail to load -SYNONYMS (which is automatically loaded with the graphics and Editor options) then you cannot clear the screen EXCEPT by using SYSTEM!
Using 16 SYSTEM (decimal!) clears the screen, and you can see from screen 33 that the clear screen word CLS is defined in just this manner!

If -SYNONYMS is loaded there is no advantage to using 16 SYSTEM instead of CLS.

More Forth? WRITE in with your detailed queries! If there is no SAE I will assume you want your reply in TI*MES!!!

I now have from the US of A a little disk based documentation on TI Writer for any of you unable to obtain a copy of the manual. If you send for a copy of the XB TIW Loader with the TI Writer files, please would you indicate if you would like included on the disk either an up to date User Library listing OR the TIW documentation!

BASIC BASIC BASIC BASIC

"There's never anything in TI*MES for the user with no fancy peripherals, just Basic or Extended Basic...."
Hmmm.... what about the excellent TIPS FROM THE TIGERCUB series and the EXTENDED BASIC TUTOR series, both long running?
There is quite a lot of other material useful for the less equipped user.
And here is advance notice for any such user just skimming through Rambles... keep your eyes open, 'cos you will shortly come to a little surprise: 32 sprites in TI BASIC with no special modules required, no peripherals except a tape recorder...
(Ha! That even made the machine code programmers sit up eh!!!)

REVIEW: GENIAL TRAVelER
Flippy diskazine from GENIAL COMPUTERWARE
835 Green Valley Drive, Philadelphia,
PA, USA, 19128
Cost: Advertised price US$30 to 31.12.85 for six copies, issued bimonthly.

Volume One, Number One. Received by Air Mail on December 10th 1985.

Side One consists of DV80 text items, but if you do not have a TI Writer do not despair as a very clever machine code file reader is included. Both sides of the disk are accessible by menu.

continued.....>

On side one can be found 21 files, including introductory text, some machine code source code for programs on side two, an article by RON ALBRIGHT (that name rings a bell....) explaining how TI ARTIST pictures can be picked up by GRAPHX... and as each has different features, the two together constitute a very powerful Graphics package. TI ARTIST also has some compatability with DRAW A BIT 1 and 2. There is an assembly language tutorial. Articles on double column orinting (like this) and sideways printing.

SIDE TWO has 29 files. Many of these are XB Program files... but they are not! Following in the footsteps of FUNLWRITER (but written independantly) we have XB programs which are really machine code programs!
Contents include: Two alternative character sets for your programs, switched in instantly; a slow disk copier, a machine code disk cataloguer which can sit in memory until you need it and be called from your program or in direct mode; a DEFTABLE reader...
Also the two column program and sideways print program (the latter with two fonts supplied); microtutorials on disk sector zero and firebutton; several sector access routines and demos; the game of HOLEY MOLEY, a simple disk protector; a fascinating math demo; a maddening game of penny toss, which the computer seems to always win even if YOU toss a real coin, a program to zip through the disk and write protect all the files (NOT a good thing to do to a machine code program format file!).
Also a fast disk cleaner (eg reduces the contents to zilch but keeps the disk initiallisation); and a program which allows you to save to disk OR TAPE your machine code programs in ordinary program format... so in theory an owner with just a tape recorder and 32k could load machine code. I don't seem to have any machine code programs written for XB to test this... it will NOT work with machine code programs written for Editor Assembler or for Mini Memory.
ALL of this for just US$5! Astonishing value.

Here is a file from Side One:

«

H E L L O , F R I E N D !

As your friend, I have made it pos- sible for you to make a personal backup of this disk for your own personal soft- ware library. I put no fancy protection schemes on it -- it's very friendly!

As my friend, will you do me a per- sonal favor in return? Please do _not_ make any copies of this disk for your friends. Instead, please invite them to become a subscriber like you. Thanks!

Your friend,

Barry Traver

more...continued.....>

P.S. I will be happy to hear from you as to your suggestions on how I can make improvements for future issues of the TRAVelER. Let me know what you want to see more of (_or_ less of, for that matter).

My address is 835 Green Valley Dr., Phila., PA 19128, and my phone number is 215/483-1379. If you decide to write to me, I _will_ send a personal reply, if you enclose a S.A.S.E. (self-addressed, stamped envelope). Thank you for your interest in the diskazine.

P.P.S. If there is interest in it, I am considering beginning a "Letters to the Editor" section in the next issue. »

The game HOLEY MOLEY is by John Behnke, whose name will appear later on...

Barry Traver, the Editor, has had material published in 99er, The Smart Programmer, and Super 99, as well as being a Sysop on CompuServe.

The subscription price of US$30 for six issues is only current to 31.12.85, before this issue of TI*MES reaches you... however Barry may hold the price, so if you want a sub, try sending $30.

I did ask Barry if there was an overseas surcharge, but have not had an answer, and he has not asked ME for more funding, so assume none for the time being.

The diskazine is very highly recommended.

In this issue of TI*MES you will find some source code written by John Behnke for up/down/sideways scrolling in Extended Basic. The source code should be prepared with Editor Assembler in the usual way using only Option R.

BASIC BASIC BASIC BASIC BASIC
SPRITES SPRITES SPRITES

NO PERIPHERALS REQUIRED

This item is taken from SYDNEY NEWS DIGEST, the publication of TI.S.H.U.G in Australia. It appeared in the March 1985 issue, and was sent in by Marcello Zannini of the Italian Users Group in Bologna, Italy.

This routine allows you to have 32 sprites in TI Basic, with NO modules or peripherals required. The sprites do not have automatic motion, and there is no CALL COINC, but the routine opens up the 32 graphic planes, and allows a character to be placed with single pixel precision. Sprite can be moved "manually" to give single pixel movement of characters if required.

Sprites in TI Basic, no modules required.

You may recall in an earlier RAMBLES how we produced some sprites in TI Basic with the Mini Memory Module, using CALL POKEV. See TI*MES Issue 8 page 10.
Now, with no module in place, we do not have POKEV available, so the puzzle is: how, using TI BASIC, can we change memory?

TI Basic has one easy to use command which can change 8 bytes of memory very quickly... it is called CALL CHAR, and it writes these bytes into any area of VDP RAM mapped as "character definitions".

If you stayed awake through the article on VDP REGISTERS in TI*MES issue NINE, you will realise that by changing VDP Register FIVE, we can move the SPRITE ATTRIBUTE LIST to any part of VDP RAM, INCLUDING the area the console considers to be the character definition table.

If we can do this, then we can use CALL CHAR to write to VDP RAM in an area considered by the CPU to define characters, AND AT THE SAME TIME, define our sprites.

So, the puzzle becomes one of: How do we change the VDP registers using no modules... CALL PEEKV is not available in ordinary TI BASIC.

Now the really clever bit (ringraziamenti Marcello!) -- when you load a program from cassette, there is a HEADER at the start which tells the computer what you are loading and where to put it. Why don't we use the header to place a value into VDP RAM to change the VDP REGISTER!!!!!

* NB: If you have more than a cassette recorder, disconnect now! This article is for Console and Cassette ONLY. OK.!

The first step is to set the VDP Register, and Marcello has supplied a general purpose register changer.... see TI*MES Issue Nine for further details.

Type in this program, then RUN it, with a blank tape in the recorder!

```
 10 REM FILES GENERATOR
 20 TO MODIFY VDP REGISTERS
 30 REM (C)OPYRIGHT IT U.G.  BOLOGNA, ITALY
100 CALL CLEAR
110 INPUT "REGISTER # (0-7)? ":R
115 INPUT "VALUE (0-255)? ":D
120 A=18429-(256*R+D)
130 X$=CHR$(0)&CHR$(0)&CHR$(0)
140 OPEN #1:"CS1";OUTPUT,FIXED
150 PRINT #1:X$&X$&CHR$(INT(A/256))&CHR$(A)
160 CLOSE #1
170 END
```

To use the program below, with sprites, you must ENTER the values:
REGISTER=5, VALUE=15 [MORE ----->]

With a value of 15, the sprite table occupies the same memory as the definitions of characters 144 to 159. If you enter a value of 14, the sprite details are in the same location as characters 128 to 143.

After you have RUN the above program, you will have an odd file on tape.
Do a FULL RESET by typing BYE and reselect TI BASIC.
Now LOAD the tape file as though it was a program, with OLD CS1.
After you press ENTER at the end of the load, the screen will misbehave (watch for the colour black).
Now press an alphabetic key and then press ENTER.
Look...."MEMORY FULL"!!!
Type in NEW.

The VDP register is now reset until you QUIT or BYE.

Sprites can be placed on the screen as follows:
CALL CHAR(144,"Y1X1F1C1Y2X2F2C2") * Actually use 0-F not YX etc!)
where each CALL CHAR carries the four parameters required for two sprites, with each parameter a two digit hexadecimal number.
Y=Row (0-191), X=Column(0-255), F=ASCII+96, C=COLOR(0-15)

What is the HEX for (decimal) 122?:
122/16= 7 remainder 10 (10=>A where > means HEX)
  7/16= 0 remainder 7 (7=>7)
Therefore 122= >7A

The following demo program builds an array H$ such that we can use this to build up the hexadecimal string required.
NOTE: As with mini memory, we MUST terminate the sprite table with a value of 208.
No matter which is the highest value sprite, always end the definition with a hexadecimal equivalent to decimal 208!
Ready...

```
 1 REM IT U.G.  BOLOGNA ITALY
 3 CALL CLEAR
10 DIM A$(16),H$(255)
20 FOR P=1 TO 15
30 A$(P)=SEG$("0123456789ABCDEF",P+1,1)
35 NEXT P
40 FOR P=0 TO 15
45 K=16*P
50 FOR J=0 TO 15
55 H$(K+J)=A$(P)&A$(J)
60 NEXT J
65 NEXT P
70 REM SPRITE MAGENTA DEMO
75 F$=H$(128)&H$(64+96)
80 F$=F$H$(14-1)&H$(208)
85 FOR Y=0 TO 191
90 CALL HCHAR(12,12,144)
95 CALL CHAR(144,H$(Y)&F$)
99 NEXT Y
```

RAMBLES depends on YOUR instructions for its content!
I am not an expert on machine code, pascal or hardware, but can answer most questions on other items! If you have a problem, if you want to do something and dont know how....or if you have solved a problem... write to me!
For a direct answer an SAE is essential! and may take some weeks!

Tell me what you wish to see in RAMBLES.
Would you like us to repeat information on frequent causes of system failure (and what to do about them) such as dirty key contacts, dirty module sockets, or static discharge damage?
Would you like more PROGRAMS and if so in what language?
Would you like more language tutorials- what language, and what is causing you difficulty?
More or less reviews?
More or less excerpts from other publications?
My address is in the opening paragraph of RAMBLES!

++++++++++++++++++++++++++++++++++

There is one excellent book on Assembly Language which many of you will have already... your copy may have the following errors, reported by Central Iowa 99/4A U.G. and taken from Southwest Ninety-Niners Newsletter, August 1985:

Page 25, Lines 11 and 12:

```
    11 START MOV  R11,@SAVRTN
    12       LWPI WSPREG
```

Page 112:
Lable S62 should read MS62
Page 115 and 121:
PBASIC should be:

```
PBASIC MOVB *R2+,R1    : DEC R3
       AB   @OFFST,R1  : JNE PBASIC
       BLWP @OFFST,R1  : RT
       INC  R0
```

==========

PROJECT for issue 12:
A detailed list of CALL LOAD addresses
PROJECT for issue 13:
A complete index to issues 1 to 12
(That should test DATABASE 1 out!!!)

==========

LATE REVIEW: MECHATRONIK EXTENDED BASIC IIplus
(See ad in this issue perhaps for availability and price!)

As press date drew ever closer, through the door comes a review copy of this new version of Extended Basic. Not a lot of time to investigate it too thoroughly, but enough to check out the basics.

EXTENDED BASIC IIplus is a standard TI Module, and contains the standard TI Extended Basic Version 110, plus another 8k of extra CALLs, plus a pseudo-hi-res package from APESOFT (of Austria).

The documentation I had was a DRAFT running to 102 pages. These described ONLY the additions to TI XB, so you can see the changes are not trivial.
Although the documentation was thick, there were a few printing errors, a lot of literals, and in many cases the commands has not been very well explored or detailed.

WARNING: The extra chips in the module draw more power: over the TI specification, but that was sufficiently safe to permit the extra drain. The module does run hotter than TI XB! AND YOU MUST NOT OPERATE THIS MODULE WITH A CMOS 32K RAM POWERED BY THE CONSOLE. The console power supply won't take that much extra drain.

The extras available come in two types:
1. EXTRA CALLS available with the module only
2. EXTRA Graphics capability WITH 32K RAM.

Lets look at (1) first:
Extra calls include: BHCOPY, VPEEK, VPOKE, GPEEK, ALLSET, WAIT, MOVE, MSAVE, MLOAD, BYE, NEW, RESTORE, QUITON, QUITOFF, SPROF, SPRON, SCREENOF, SCREENON, and FIND.
BHCOPY is a screen dump program. Not very well explained, and at first I was ready to dismiss it entirely. In fact it is one of the better screen dumps! It permits you to set your printer to the best line feed spacing for your printer, and at the start of each line you can send up to ten control characters (with my set up I had to send a line feed, CHR$(10)!). You use it by opening a file to your printer, specifying control codes and then using CALL BHCOPY within your program.
VPEEK, VPOKE and GPEEK... similar to PEEKV and POKEV but with a GROM peek as well!
ALLSET resets lowercase as well as upper case characters.
WAIT halts execution for a specified time OR until a key is pressed.
MOVE moves code within memory, and can move code between VDP and CPU ram. This allows you for instance to save screen displays in the 32k ram and change the screen INSTANTLY with a single MOVE command. There may be some capability of using the 32k as a hard disk but this is not documented.
MSAVE and MLOAD allow for CPU RAM to be saved to tape or disk and subsequently reloaded. MLOAD can load machine code programs intended for Option 5 of editor/assembler, with the added option of defeating the auto start.
In theory we may have here the ability to save and load machine code to/from cassette, but this is not adequately documented and I have been unable to make it work.

BYE and NEW can now be used in your programs as CALL BYE and CALL NEW!
CALL RESTORE allows you to RESTORE to a numeric variable. I am extremely dubious about use of this command!
QUITON and QUITOFF enable and disable the quit key... that is you can prevent acidentally QUITting back to the title screen!
SPRON and SPROF allow you to set up your sprites, then instantly stop them all and subsequently instantly set them all off again.
SCREENOF and SCREENON turn the display on and off and allow you for instance to set up a screen while the tv screen is blank.
CALL FIND searches a string array for a particular string and returns the number of the element it found the string in.

ALL OF THE ABOVE REQUIRE ONLY THE MODULE.
If you also have expansion memory, you may also use the following:

PSEUDO HIGH RES GRAPHICS by APESOFT.
CALL APESOFT loads the graphics routines (FORTY of them!) into your expansion ram, and you access them with CALL LINK.
This is not true bit map mode, but works by placing characters (or tiles as they are called in LOGO!) on the screen, and these are redefined as your graphics commands demand.

The WINDOW command is essential to use these graphics, as there are 768 potential screen positions and only 15360 pixels can be turned on, in 240 character positions. WINDOW determines where on the screen the definable characters are placed.

And the documentation of WINDOW is insufficient. At least, I could not follow it!

With 40 commands available you will appreciate that this is a fiendishly complex way to do hi res graphics, and I just dont have the time to sort it all out. It does however permit hi res graphics to be called from an EXTENDED BASIC program, and the speed is pretty fast.

Restrictions: FILES is set to a fixed value of 2, indicating use of the third file table in VDP RAM as a buffer or table of some sort. CALL SOUND may not be used in the hi-res mode! Sprites are not available in the hi res mode. In fact, quite a few commands are not available, especially those that deal with screen input/output: but these are mostly replaced by equivalent CALL LINKs.

An important factor to consider before buying this module:
You will probably have to write programs to use it yourself. There are hardly any XB programs put on sale these days! and there will probably be more TI XBs around than this version.

If you do not have any XBs, then this module MAY be worth considering, especially if you cannot afford any other peripherals. In this case the extra commands will be of great help to you in your programming.

If you do have extra peripherals, the extra commands MAY be worth the price differential. That is for you to decide. And if you want FAST hi-res graphics from an ExBas program, you will have to grapple with this APESOFT package. There are no realistic competitors.

If you have the 128k card from Myarc or may buy one shortly, wait for their XB Version 4... which will be faster, but requires the 128k card to operate. (=Myarc XB Vn2.12)

If you ALREADY have a TI XB, this product may be considered as a "back up" (or vice versa) but you will have to consider the price carefully.

I have tested the Mechatronic XB2plus as well as I am able, especially with complicated machine code programs, and it seems to be fully compatible with TI's XB. All commands work as indicated in the manual (where I was able to work out what they meant) but I suspect the commands are MORE powerful than indicated. You will have a lot of discovery to do!

==========

Our friends in the American and Australian user groups have for some time benefitted from an arrangement with software manufacturers whereby the User Group pays the software house a lump sum, and can then make copies of their program FOR THEIR MEMBERS without further charge.

We have now been approached by the copyright owner of one of the very best machine code games for the TI, TI-RUNNER, which everyone has given rave reviews to, quite justifiably. The program is fast, increasingly difficult, and has no less than FIFTY screens.
The idea of the program is that you climb ladders and walk the floors, picking up treasures and keys, while avoiding nasty creatures who chase you. They can also pick up the treasures and keys, but fortunately they drop these when they fall (temporarily!) through holes you dig in the floor.
You pass on to the next screen only when you have collected all the keys.
Not an entirely original idea, but superbly presented and full of what HCM might call engrossment!

ED: TI RUNNER is now available from the TI EXCHANGE LIBRARY on DISK and it is exclusive to Members only. The program requires 32k expansion plus Extended Basic, or Extended Basic 2 and Disk drive. This program is subject to the same conditions laid down by the Group regarding copyright etc. Members should also note that this program had a retail value of $24.95 when sold on the USA market. A word of warning this game is addictive, and sheer entertainment, you will play for hours and hours, what fun.

Two important items to conclude with:

i. PIRACY.
On Friday December 20th 1985, Messrs Brady and Brady and Lynkirk Ltd apppeared at Bolton Crown Court to appeal against sentence and conviction. The GMC (who brought the action under the Trading Standards Act) were represented by a young Barrister and an inexperienced solicitor. The defence brought forward a technical point of identification, and upon the advice of their Barrister, the GMC withdrew charges against the above named. Costs running into four digits were awarded against the GMC. **Not one witness against Lynkirk was brought into court.**

No further legal action is to be taken. Although over three hundred counterfeit tapes are known to have passed through the Brady's hands, they have suffered no penalty. [In 1985, computer software was NOT considered copyright in the UK. This position has now changed]

ii. PIRACY.
A response from TI-USA, just as this text was about to be mailed in. It deserves quoting (at least in part):

"First of all, let me state for the record that the only programs TI ever released to public domain were TI FORTH and enhancements *[ti's underline]* to Multiplan and TI Writer. TI has never authorized copying of the main TI Writer and Multiplan programs nor any other TI Cartridge Program. [Appears to be referring to module loaders for TIW and M- confirmation sought-ss].
"Although it would appear by TI's inaction regarding software pirates to date that it intends to ignore the problem or declare a general amnesty, that is not the case. Only recently have these problems been specifically brought to the attention of those having responsibility for 99/4A phaseout matters.

"TI does not wish to seem unsupportive of those continuing to use their 99/4A's; however, to condone 99/4A software piracy would be unfair to those retailers still in possession of TI 99/4A software inventory and would be inconsistent with TI policies toward protection of its intellectual property rights. We will, however, consider granting a license for reproductions of TI-owned programs. ..... I will investigate whether we may grant a licence to such programs and whether it is in TI's best interest to do so.

"Thank you for your continued interest in Texas Instruments ..... "

Signed Scott M Fryar, Consumer Contract Services.
Texas Instruments Inc. Mail Station 3653.
Post Office Box 225474 DALLAS Texas USA 75265 "

The definitive statement for all to see.- please would US readers pass it on to other groups.
May have further news for next issue.

EARLY DAYS.... from TIdings Vol 1 No 1... the USA TI User group had ONE THOUSAND FIVE HUNDRED MEMBERS!!!!

Anyone have copies of TI-USER issues 5 upwards that they don't want? Would welcome them here at.....

10 Alstone Road STOCKPORT Cheshire SK4 5AH

ALL THE BEST FOR '86

by TERRY ROSS HV99ers

DO IT YOURSELF MODULE PORT EXPANDER

FOR THE INTEREST OF OTHER CLUB MEMBERS WHO REQUIRE A CARTRIDGE EXPANDER WITH A CAPACITY OF FOUR OR MORE CARTRIDGES , AND THE ADDED ADVANTAGE OF PLACING THE UNIT OUT OF THE IMMEDIATE WAY OF THE CONSOLE , I AM INCLUDING DETAILS OF A UNIT WHICH I HAVE CONSTRUCTED AND WORKS ON MY OWN TI99/4A BUT MAY REQUIRE SOME ADDITIONAL CIRCUITRY TO THAT SHOWN IN THE ACCOMPANYING DIAGRAM. I WILL ADVISE AS I PROCEED FURTHER BY WAY OF THE NEWSLETTER AS TO ANY CHANGES MADE.

MY OWN UNIT HAS SIX MODULE PORTS HOUSED IN A PLASTIC CONTAINER , ALONG WITH A SIX WAY TWO POLE ROTARY MODULE SELECTOR SWITCH AND A MOMENTARY ON PUSHBUTTON RESET SWITCH FOR RETURNING TO THE MASTER TITLE SCREEN PRIOR TO SELECTING THE REQUIRED MODULE. THESE ITEMS (INCLUDING SOME RESISTORS/CAPACITOR) ARE CONNECTED VIA A 36 WAY IDC CABLE TO A DISUSED AND SLIGHTLY REARRANGED (AND NO LONGER REQUIRED) MODULE WHICH PLUGS DIRECTLY INTO THE MODULE PORT.

I BUILT THE UNIT ON A COPPER STRIP BOARD AND SOLDERED ALL ITEMS ONTO THE PRECUT COPPER TRACKS , THEN WIRE WRAPPED ALL PINS BETWEEN EACH EDGE CONNECTOR. (AN ETCHED BOARD WOULD HAVE SAVED A CONSIDERABLE AMOUNT OF TIME IN CONSTRUCTION).

TWO DIAGRAMS ARE SHOWN , ONE GIVING THE PINOUTS OF THE MODULE PORT LOOKING FROM THE FRONT OF THE CONSOLE , AND THE SECOND SHOWING THE WIRING DIAGRAM .

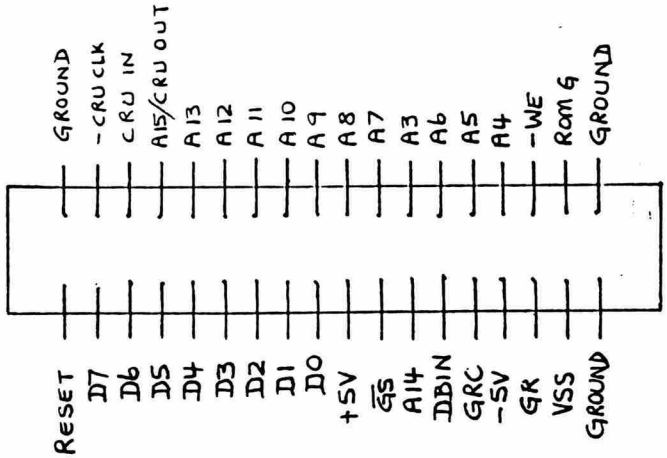
PARTS REQUIRED

Some .01 CERAMIC CAPS
47-51K OHM RESISTORS 5%
COPPER STRIP BOARD OR CIRCUIT BOARD.
36 WAY D/SIDED EDGE CONNECTERS (UTILUX H271800 GD8 OR EQUIV.)
36 WAY IDC CABLE
6 WAY 2 POLE SWITCH
MOM. ACTION PUSH-BUTTON
CASE WITH LID
WIRE FOR WIREWRAPPING ??
DISUSED MODULE "COMPLETE WITH A D/SIDE EDGE CONNECTER CARD "
NOTE !!! NOT ALL MODULES HAVE 36 CONTACTS ON THE EDGE CONNECTER

ED: THE DOUBLE SIDED UTILUX EDGE CONNECTORS SHOULD BE AVAILABLE FROM GOOD ELECTRICAL STOCKISTS. WILL MEMBERS ADVISE ON WHAT SUCCESS YOU HAVE IN OBTAINIG PARTS AND COST OF THESE FOR THE PROJECT.

This article was first printed in the HUNTER VALLEY USERS GROUP NEWSLETTER, DECEMBER 1985. We invite any comments from group members regarding the construction and design of the PORT EXPANDER outlined here. A word of WARNING DO NOT ATTEMPT THIS UNLESS YOU HAVE KNOWLEDGE OF ELECTRICAL CIRCUITS etc.

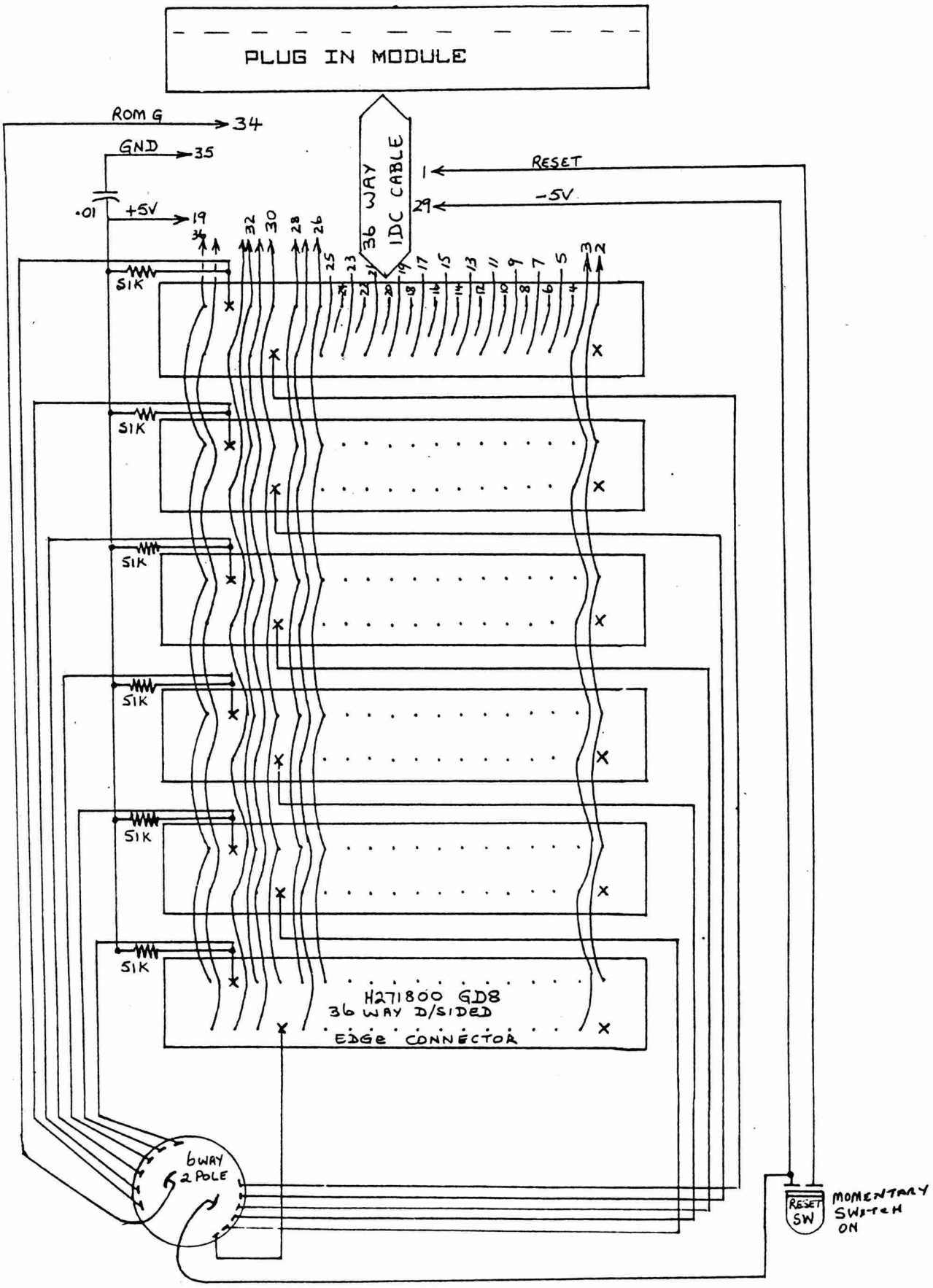
If we receive any more information either from you or HV99ers in Australia, we promise to publish in the next issue of TI*MES.



THE GROUP CAN SELL YOU A SUITABLE MODULE WHICH HAVE THE REQUIRED 36 PINS, COST IS #3.95. (It is a Munchman cartridge).

LAYOUT OF PARTS FOR CARTRIDGE EXPANDER

SHOWN LOOKING AT UNDERSIDE OF BOARD



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****

T. I. BOOKS.

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Dynamic games for your TI -Scott Vincent. (4.95) £2.
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99'er magazines - Nov 82, Jan 83, April 83, Oct 83. £1.25 each.
SOFTWARE.
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Quasimodo (I) £3.
Froglet/Battleships (T) £3
Teach yourself Extended Basic £2.
CASSETTES:- OTHERS
Kippy's nightmare (T) for mini memory. £4.
TI 99/4A EXCHANGE, 40 BARRHILL, PATCHAM, BRIGHTON. BN1 8UF 0273 503968.

****

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TI-LINES
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SUPPORT YOUR NATIONAL BULLETIN BOARD

ALAN DAVEY's 4ABC showcase TI Bulletin Board is starting to come of age, and I understand that it now has a dozen regular readers. There has even been the beginning of what Alan hopes may become a torrent of contacts from outside the UK. He has been advised that now that a TI Bulletin Board has been established in the UK, it will begin to form the focus for many TI owners outside the UK, particularly in Europe, and will act as a meeting place for many "wired" TI Users.

However, the equipment will not last for ever, and Alan makes no charge for accessing his board (BT do though!) and it would be helpful if interested parties were to dip into their pockets for a donation to the maintenance and replacement costs for 4ABC. If you feel that you would like to see the only TI board survive, and go on to expand and provide even more sources of information and contacts, then please send your contribution (no "crossed" items, please) to Alan at:

88 Halcombe Estate
CHARD
Somerset
TA20 2DU

Alan has expanded the board and it now offers a selection of adverts and helpful mini-articles and tips. It operates all day Sunday, and if you have a modem or acoustic coupler you should be able to access it. Call Alan during the week on CHARD (04606) 4511 to arrange the finer details, and do not be discouraged if you have difficulty. Talk it over with Alan and he will guide you through the procedures.

Users of Alan's board might like to note the following:

The first character that Alan's modem should receive is the carriage return, sent by pressing the ENTER key. However, if there is noise on the line, his equipment may interpret it as a character. In that event, you may receive an error message which advises you to either select a valid page symbol or press R to reselect. If you have not been via the instruction page, your screen colours will not have been reset, and you should press ENTER and ignore the error message. If you do not press ENTER, the screen colours will not be reset - if you are happy with the yucky green default colour, then you can carry on as normal.

Secondly, when you type the letter corresponding to the page you have selected, you may also type at least one space and then continue typing for up to 80 characters. This facility enables you to select a page and at the same time leave a message for Alan (all of your keypresses are fed either to his printer, so that he has a permanent record of your passage through his board, or to his screen where he may be monitoring your progress). In this way you can ask him, if he is available, to pick up the phone and have a voice-to-voice session.

However, newly-joined OTIUser NEVILLE BOSWORTH has discovered that you can leave a note - long or short - to Alan without having to also wait the 30 seconds it takes for a page to be transmitted. What you do is to type an invalid page selection - say, "S", - whereupon you will receive the error message on your screen, and you can then type out up to 80 characters of your note. In this way you can compile your note in double quick time. Contact Alan if you haven't understood my explanation!

Thirdly, some Users have been given pause for thought by what appears to be a bug in the TEII protocol. If you decide to dump a copy of your current screen contents to your printer with CTRL 2, when the cursor re-appears after the printout it will NOT be where it was before the CTRL 2. Instead it will have been relocated to the HOME position - the top left of your screen. The use of CTRL 2 will also not interfere with anything else that you may be typing to Alan.

Alan is currently looking at ways to enhance his board still further through the use of a "converse with Sysop" facility so that you may use your console rather like a teletype and "talk" to Alan without needing to break the computer/modem connection.

Alan can also advise you on the modem models and prices, if you should be looking to get yourself "wired".

PETER BROOKS

ED: You may also like to know that the Software library have the programs to suit your modem. They have been used with success. Also there is a PRESTEL program, this is exclusive to TI99/4a Exchange here in the U.K.

continued from p8

FREEWARE LISTS

[1] DM1000 Bruce Caron ... 25 Ottawa St. Arnprior, Ontario, Canada K7S 1W7 A marvelous disk-based Disk Manager which rivals CorComps manager.

[2] MASSCOPY Steve Lawless 2514 Maple Avenue, Wilmington, Delaware 19808 EXCELLENT disk cloner; features ability to copy to 2 drives at once and uses the Foundation 128K card to copy a disk in ONE PASS!

[3] X_DISASM Fred Hawkins 1020 North 6th Street, Allentown, PA. 18102 An XB disassembler with many unique features and terrific documentation for those that PAY!

[4] SUPER DISK DUPLICATOR Tom Knight 7266 Bunion Drive, Jacksonville, FL. 32222 Allows inputting start and stop sector number for copying disks.

[5] TK WRITER Tom Knight (See Above) Loads TI WRITER from XB or E/A. No cartridge needed!

[6] NEATLIST Danny Michaels Route 9, Box 460 Florence, AL. 35630 XB utility to list multi-statement lines to printer or disk for easy reading and references program variables to line number used.

[7] SCREENDUMP Danny Michaels (See Above) Screen dump to EPSON compatable printer with double or single size and vertical or horizontal page printout.

[8] The DIRECTOR Ron Rutledge 1020 3rd Street Waukee, IA 50363 XB program database that allows cataloging disk-based programs.

[9] FAST TERM Paul Charlton 1110 Pinehurst Court Chalottesville, VA 22901 Simply, THE BEST TERMINAL EMULATOR IN THE WORLD!

[10] SPRITE BUILDER John Taylor 2170 Estaline Drive Florence, AL. 35630 XB graphics generating program with assembly language routines for speed at crucial places. Includes a full disk of preformed graphics.

[11] PILOT 99 Thomas Weithofer 1000 Harbury Drive Cincinnati, OH. 45220 An ENTIRE language for the TI that is the simplest programming language known to us (or anyone else!)

[12] TE4TH Ken Carruthers 3537 Faberge Way, Sacramento, Ca. 95826. A Terminal Emulator Program written in Forth Language. A must for persons interested in Forth Language. $5.00 plus diskette and stamped mailer.

[13] EASYSPRITE Tom Freeman 515 Alma Real Dr.,Pacific Palisades, CA 90272 An extremely fast XB program with assembly routines to create graphics sprites with easy cursor control saving for program insertion.

[14] DISASSEMBLER Marty Kroll 218 Kaplan Avenue Pittsburg, P. 15227 Super-fast disassembler, 100% assembly and full featured.

[15] TECHIE BBS Monty Schmidt 121 N. Blair, Madison, WI. 53703 Freeware BBS system for the 99/4A.

[16] COMPACTOR Monty Schmidt (see above) Assembly langauge program that takes an uncompressed D/F80 AL program and will compress to about 2/3 the disk space and yield faster load times.

[17] UNCOMPACTOR Monty Schmidt (see above) Opposite of above.

[18] PRO 99er BBS Mark Hoogendoorne 21 Long Street, Burlington, MA. 01803 TI BBS system with TRUE TE2 transfer capabilites.

[19] DISK MANAGER Todd Kaplan, 5802 N. Western Apt. 3S, Chicago, IL. 60659 INCREDIBLE Disk Manager on disk; forget TI'S DM2

[20] ASSAULT THE CITY, John Behnke 5755 W. Grace, Chicago, Il. 60634
An original Tunnels of Doom Game.

[21] HBMPRINT, Bob Lawson 16223 Mill Point Dr., Houston, Tx. 77059. A utility to print Household Budget Management Module Files.

[22] DISK FILE CATALOGER, Jim Williams, 5217 122 PL. SE, Bellevue, Wa. 67115. A disk cataloger, additional information later.

[23] TRIVIA, Robert Wessler, 4300 Frazier, Ft. Worth, Tx. 67115. A Trivia style game, of great interest to Trivia fans.

[24] 2D GRAPHICS, Jean-Pierre Morin Ottawa U.G. 25 Arnprior, Ontario, Canada K7S 1W7. An incredible graphics drawing program written in Forth, with an outstanding demo, and documentation.

[25] CATLIB, Marty Kroll, 210 Kaplan Ave. Pittsburgh, Pa. 15227. A cataloging libray program, capacity 123 disks, 900 files with many good features.

[26] MASS-TRANSFER, Stuart Olson, 25322 W. Wayside Place, Lake Villa, Il. 60046. Assembly language Terminal Emulator, menu driven, x-modem transfers, capable of multiple xmd transfers at once. $10.00 plus disk and stamped mailer.

[27] CHECKBOOK and BUDGET MANAGER, John Taylor, 2170 Estaline Drive, Florence, Al. 35630. An extremely efficient program for both check book and budget maintenance. $10.00 plus disk and stamped mailer.

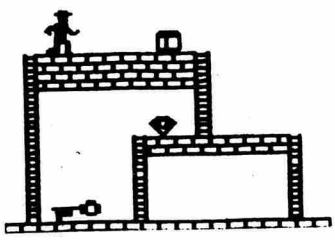
[28] SUPERBUG II, Edgar L. Dohmann, Route 5, Box 84, Alvin, Tx. 77511. Enhancement of TI's Superbug, includes changeof output device from screen, color toggles, added commands, and more. $10

LIBRARY REVIEW

EB Software

presents

TI Runner



This excellent program has 50 completely different levels for loads of action and challenge. As a highly trained commando, you will be running, jumping, drilling passages, and outfoxing the guards as you attempt to escape from the Kryon dungeon. This promises to be a favorite.

TI Runner - Disk, 32K, Ext.BASIC.....

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EPSON

CITIZEN

EXAMPLES:	*Normal Price*	***TI*MES SPECIAL***
DOT MATRIX PRINTERS		
MANNESMAN TALLY MT80+ 100cps - Friction/Tractor	*£219.65*	*£197.69*
EPSON LX80 100cps draft 16cps NLQ - 1k buffer	£293.25	**£263.93**
CITIZEN MSP-10 - 1k buffer 50cps NLQ - 200cps draft Full 2 year Warranty!	£454.25	**£408.83**
S/H EPSON RX80 F/T excellent nick, only		**£195.00**
Others available - please ask		
DISKETTES		
Parrot SSSD (10 in free plastic case)	£22.31	**£20.08**
Memron SSSD 5 coloured Red, Yellow, Green, Blue or White (NEW from USA!)	£10.35	**£9.32**
Bargain Disks SSSD (10)	£13.80	**£12.42**
Others available - please ask		
REXEL		
Mini Disc 30 disk box	£7.85	**£7.07**
Mini Disc 80 (lockable)	£27.48	**£24.73**
Data Caddy - SPECIAL! (holds printer/paper)	were £50.00	now **£25.00**
Binders (10) - SPECIAL! (for various sizes paper)	were £30.00	now **£19.00**

Parrot
flexible diskettes

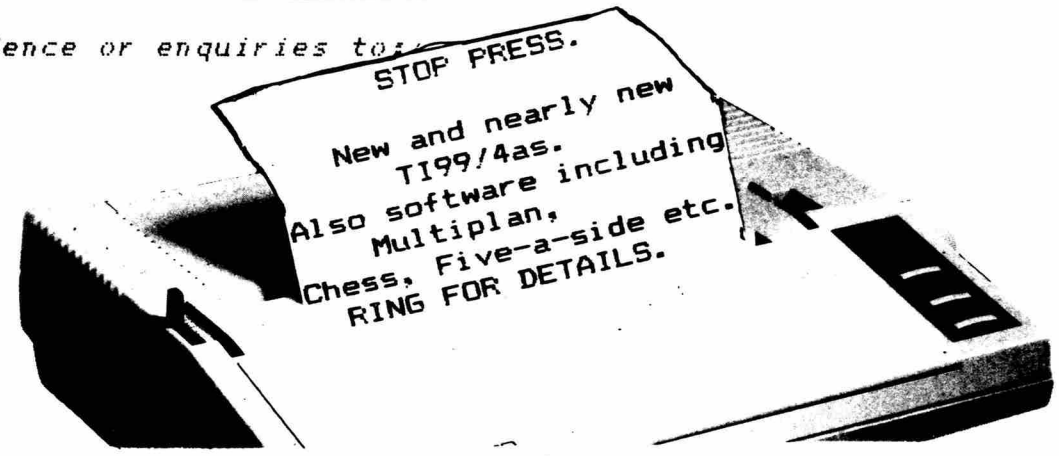
REXEL
COMPUTER SUPPLIES

RIBBONS, STATIONERY, MUCH MORE AT THE BEST PRICES

All orders, correspondence or enquiries to:

Harry Pridmore
NEW DAY
Jerrard Close
Honiton
Devon
EX14 8EF
Tel. (0404) 41856

Prices include delivery and VAT



TI 99/4a EXCHANGE,
UK TI User Group,
40 Barrhill,
Patcham, Brighton.
BN1 8UF
(Tel. 0273-503968)

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