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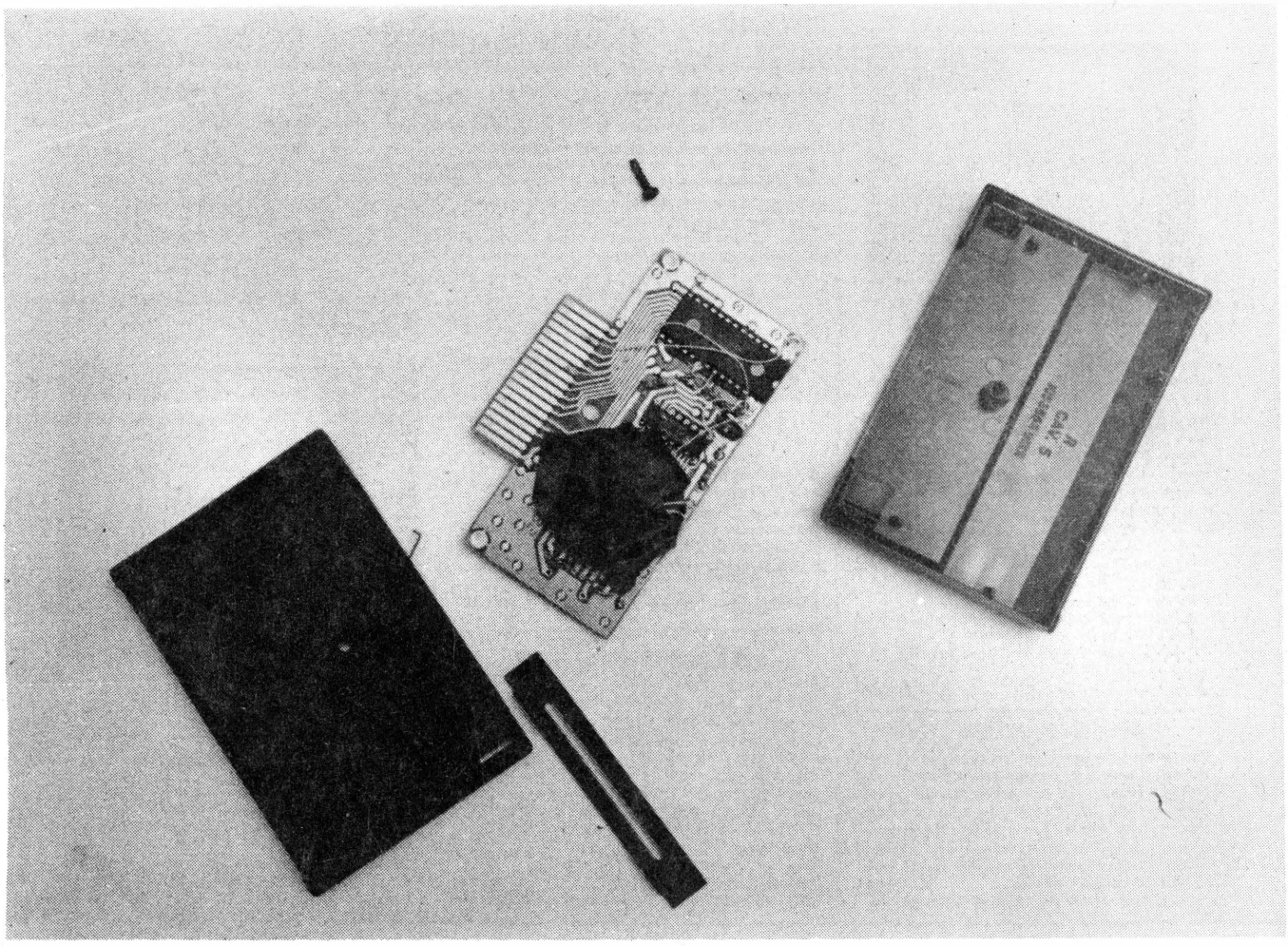
# MICROpendium

## Covering The TI99/4A Home Computer And Compatibles

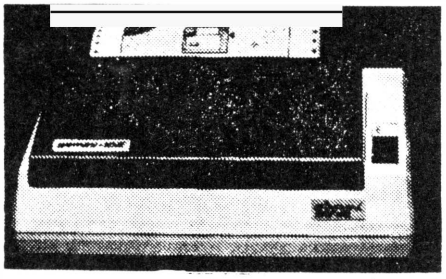
Volume 2 Number 6 July 1985 $1.50



## More on SUPER CART

# THE HOTTEST PRICES ALL SUMMER!

## star GEMINI 10X $219.95



**(When you purchase any one of three interfaces described below)**

List price on Star Micronics Gemini 10X is $399.95. Unisource Electronics slashes retail prices to a never-before-heard-of price with purchase of any one of the three interfaces described below. This is the lowest price ever offered on the Gemini 10X printer.

Call today and reserve one of the best-selling printers and interfaces of all time. Quantities are large, but at this phenomenal price, orders will be accepted on a first-come-first-serve basis.

Look at the Big Features for the Gemini 10X:

- Tractor (pin) and friction feed
- Very fast 120 characters per second print speed
- Bi-directional and logic seeking
- High density 9 x 9 dot matrix pattern for near letter quality printing
- Eight distinctive character fonts
- Standard typewriter ribbon replacement (about $3.00)
- Standard ASCII characters with special characters, block graphics characters, downloadable and even international characters.
- Centronics parallel

**GEMINI 10X**
purchased separately **UNI 142** . . . . . **$239.95**

"I would like to commend you folks with the expediency of processing my last order. I received it exactly two weeks from when I sent it in. I really hope that you can do this with my next order! I think that's great!
— Bob S., Bellevue, Washington

UNBEATABLE PRICE!!

## AXIOM SEIKOSHA GP 250

*"GENERAL PURPOSE SUPER LOW-COST PRINTER"*

**$99.95** **(When your purchase any one of three interfaces described below)**

Under $100.00! Never in the history of TI has there been a printer for under $100.00! Now, Unisource Electronics, Inc., brings you the most incredible sale ever on printers for the TI 99/4A. Call today and place your reservation for one of these unbelievably low price printers and interfaces.

Axiom Corporation's Seikosha GP 250 printer is reserve priced at an unbelievable $99.95 with purchase of any one of three interfaces described below. Just look at all of these features:

**SEIKOSHA GP 250**

- Impact type dot matrix — prints on any paper.
- 50 Characters per second in standard mode
- Standard 8-bit ASCII code with 32 special characters
- Graphics capabilities (dot addressable)
- Special characters: Double width, double height, and double width double height.
- Upper and lower case with true descenders
- Downloadable character sets

**AXI 103** (purchased separately) . . . . . **$119.95**

## ELITE 5 DAISY-WHEEL PRINTER

LETTER QUALITY PRINTER

Unisource Electronics crashes the expensive letter quality printer barrier with an incredible daisy wheel printer at an even more incredible price!

The ELITE 5 letter quality printer has all of the attributes of an expensive daisy wheel printer at a fraction of usual costs. This versatile printer produces superb LQ print out in standard, bold, subscript, superscript, and underlining. This printer is only $249.95 with purchase of any one of the three interface devices listed below.

Reserve your Elite 5 printer today! Quantities are large, but as with all of these fine printer values, response will be tremendous.

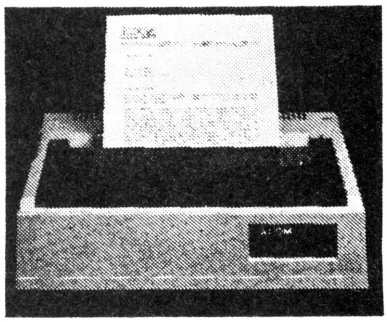
Here are some of the features of the ELITE 5:

**ELITE 5**

- 12 Characters per second print speed with quiet operation — 720 words per minute
- Logic seeking, bi-directional
- Tractor feed available
- Centronics parallel interface
- Full word processing combatibility
- Graphics mode
- Superb letter quality printing
- Interchangeable daisy wheels. Various type styles available

**AXI 101** (purchased separately) . . . . . **$269.95**

**$249.95** **(When your purchase any one of three interfaces described below)**



AXIOM

## PARALLAX INTERFACE

The ParallAx interface allows for direct-connect communication between the computer and the printer . . . just plug the ParallAx in and start printing! This is a low-cost printer interface for the TI 99/4A and is fully compatible with all of the printers featured in this flyer. The expensive peripheral expansion box is not required — nothing else is needed! The ParallAx interface has a built-in printer cable.

**UNISOURCE PRICED (AXI 110)** . . . . . **$84.95**
(Specify **AXI 100** when ordering Gemini 10X)

## RS232 STAND-ALONE

This RS232 stand-alone device **(COR 103)** serves a dual purpose. It provides the necessary interface between your computer and the printer and also has a serial port for a modem hook-up for telecommunications. Once you've mastered the new world a printer brings to your 99/4A, you may want to get involved with the Source and "talk" to mainframe computers via a telecommunications link. This device has the modem serial port already built in. Telecommunications is a natural outgrowth of having a printer system!

*Requires custom printer cable.* **(UNI 110)**
**UNISOURCE PRICED (COR 103)** . . . . . **$124.95**
**CUSTOM PRINTER CABLE (UNI 110)** . . . . . **$29.95**

## RS232 CARD

The RS232 card **(COR 101)** provides all of the capabilities of the free-standing device listed above in a configuration that fits inside a TI Peripheral Expansion Box. It also provides a separate serial port.

*Requires custom printer cable.* **(UNI 110)**
**UNISOURCE PRICED (COR 101)** . . . . . **$89.95**
**CUSTOM PRINTER CABLE (UNI 110)** . . . . . **$29.95**

VISA MasterCard

*"NO ADDITIONAL CHARGE!"*

*Prices, specifications & availability are subject to change. Please call for current price information.*

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**LUBBOCK, TX 79464**

# COMPLETE 1200 BAUD MODEM & SOFTWARE

## VOLKSMODEM™ 12 + AMA-LINK

### COMMUNICATIONS PACKAGE

MODEM ONLY $199.95

New Volksmodem XII from Anchor Automation finally brings the cost of 1200 baud smart modems down to a cost everyone can afford. This high-speed modem retails for $299.95. This smart modem is capable of full unattended operation in conjunction with stand-alone terminals and computers which have an RS232 interface. With Volksmodem XII's ability to transmit data quickly and access mainframe computers like the Source and Compuserve, it's truly the affordable way to maximize your personal computer's productivity. Get the Volksmodem XII with TI cable and AMA-Link in a special package deal that makes super fast data transmission and reception affordable.

ONLY 229.95 COMPLETE!
FOR MODEM, TI CABLE & AMA LINK

Request part numbers **ANC 107, ANC 106,** and **AMA 120 D.**

**ANC 107** Volksmodem XII (purchased separately) $199.95
**ANC 106** TI Cable for Volks (purchased separately) $10.95

AMA-Link is a diverse communications package that contains three programs in one and is ideally suited for Volksmodem and many, many other modems on the market today. AMA-Link contains: TERMINAL EMULATION, DISASSEMBLER, and ASSEMBLY LANGUAGE ROUTINES.

The first part of the package is TERMINAL EMULATION and is designed to access the skyrocketing number of TI bulletin boards around the country. TE has many features, including:

- Full or half duplex operation
- Selectable baud rates
- Text buffering for downloading up to 16k of information or programs to printer or disk.
- Simultaneous output to printer as information comes over phone

DISASSEMBLER, the second part of the program, allows dis-assembly of machine code in memory into executable assembly language source code. This part of the package only requires Extended BASIC.

AMA-Link also has ASSEMBLY LANGUAGE routines for Extended BASIC and provides several miscellaneous assembly language routines like 40 column screen utilities, search and insert, and disk file search and merge.

Requires: Extended BASIC, disk system, and memory expansion, but Mini Memory or Editor-Assembler can be used instead of Extended BASIC for the Terminal Emulation portion of the package.

AMA-Link has now been enhanced with the following features:

- Buffer control codes for high-speed operation.
- Buffer full signal to indicate text memory is almost full
- ASCII "X-on" and "X-off" protocol
- File Transfer
- Status Display showing status of different features.

AMA-Link is regularly priced at $39.95, so now is the time to take advantage of this telecommunications package. Call now and request the special package price on part numbers **ANC 107, ANC 106,** and **AMA 120 D!**

**AMA 120 D AMA-Link** (purchased separately) ..... $33.95

# COMPLETE 300 BAUD MODEM & SOFTWARE

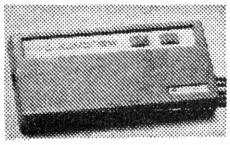
## VOLKSMODEM™ + TERMINAL EMULATOR II

MODEM ONLY $67.95

A telephone modem, when connected to your computer via an RS232 serial device will allow you to communicate to mainframe computers, data bases like The Source and CompuServe, micro computer electronic bulletin board data bases, and directly to other micro's.

Volksmodem represents a low cost alternative to expensive telephone modems of the past. Volksmodem is direct connect to a modular telephone jack and is fully compatible with the 99/4A.

ALSO INCLUDED! SPECIAL SUBSCRIPTION RATE TO THE SOURCE WHEN YOU PURCHASE A VOLKSMODEM FROM UNISOURCE!



ONLY $87.95 COMPLETE
FOR MODEM, TI CABLE & TE II

**ANC 105, ANC 106,** and **AMA 120!**
**ANC 105** Volksmodem (purchased separately) ..... $67.95
**ANC 106** TI Cable for Volksmodem (purchased separately) ..... $10.95

This 300 baud package is a very cost-efficient method for newcomers to the field of telecommunications to discover the world through their computer. And TEII is the original explorer! This module software links your 99/4A to mainframe computers like the Source and CompuServe as well as numerous bulletin boards around the country. This is a hot package deal to beat the summer heat. Call today and request part numbers **ANC 105, ANC 106,** and **PHM 3035.** With Volksmodem and the TI cable and this terminal emulation software, connect this package to any RS 232 device and explore!

**PHM 3035** Terminal Emulator II ..... 22.95
(purchased separately)

### OTHER GOOD TELECOMMUNICATIONS VALUES!

### SIGNALMAN MARK III

A low cost, direct connect, high quality modem that comes complete and ready to use — just plug it into an RS232 device. Fully compatible with the 99/4A.
**ANC 100** ..... $79.95

### TE 1200
by SoftMail

Allows you to set the parameters of your computer to those of the computer you wish to communicate to. Also features variable baud rates up to 9600, and special spooling feature that allows data being transmitted to be automatically outputted to a printer.
**SOF 102 D** ..... $39.95

### EXTENDED BASIC 49.95!

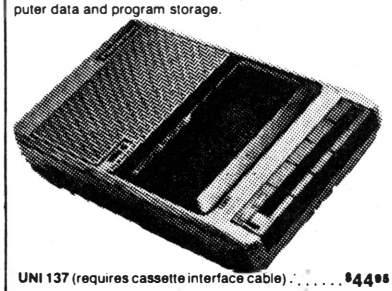
Now for a limited time only and available EXCLUSIVELY for readers of Micropendium!!

Through special arrangement with Exceltec, Unisource Electronics, Inc. is proud to offer readers of Micropendium Extended BASIC modules, complete with manual.

Exceltec has been licensed by Texas Instruments to produce the Extended BASIC module and manual. At these prices and even if you already have XB, order a spare. Order Now! **STA 116.**

### AFFORDABLE DATA/PROGRAM STORAGE CASSETTE RECORDER

The Panasonic Computer Recorder is a low cost method for storing data and/or programs on standard cassette audio tapes. It is guaranteed to be 100% compatible with the TI home computer. It includes tone control, volume control, tape counter, and much more. Designed specially for computer data and program storage.



**UNI 137** (requires cassette interface cable) ..... $44.95
**UNI 137 Cbl** (includes cassette interface cable) ... $52.95

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NAVARONE

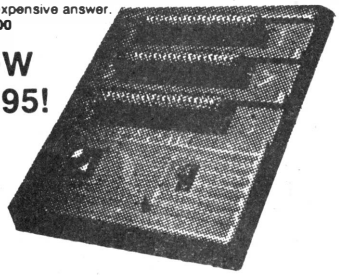
### CARTRIDGE EXPANDER
PREVENT COMPUTER WEAR!

Plug, unplug, plug, unplug. Sound familiar? All that plugging and unplugging is more than a nuisance — it's slowly but surely wearing out the contacts on your computer.

There is a way to combat this wear by up to 90 percent or more through a cartridge expander! The Navarone Cartridge Expander holds three of your most used cartridges so that you can switch back and forth between modules with the press of a reset button rather than jerking the entire module out of the computer.

Always switching back and forth between Extended BASIC and Disk Manager? Kids play 10 modules 100 times a day? Active computer user? This cartridge expander is the inexpensive answer.
**NAV100**

NOW 29.95!



*Prices, specifications & availability are subject to change. Please call for current price information.*

AMA SOFTWARE

- GENERAL LEDGER
- INVENTORY
- MAIL LIST
- ACCOUNTS RECEIVABLE

## UNBELIEVABLE!

REGULARLY $139.95 EACH!

Now, through special arrangements with AMA Software, **Unisource** offers all four of these professional business quality software disks at never-before-heard-of prices!

**Limited Quantities. ACT NOW!**

*All require Extended BASIC, 32K, 2 Disk Drives & Printer*

ALL 4 DISKS $99.95

SAVE $460.00

**AMA 200 ..... $99.95**

**GENERAL LEDGER**
Allows you to get a grip on the "Big Picture" of your business. GL gives you a financial overview and complete management capabilities. GL also accepts automatic posting entries from AR, Inv., and ML. Printouts include financial statements, chart of accounts, journal reports, detailed trial balances, balance sheets, journal edit lists, journal posting lists, and others.

**INVENTORY**
This diverse program provides for both inventory and order entry management. Inventory allows for creation and maintenance of up to 1500 inventory items, including part numbers, descriptions, five different prices, and eight other options. Order entry allows for invoicing, posting to AR and GL, pick tickets, stock status, sales journals, and others. Of course, printouts of all transactions and journals are available.

**MAIL LIST**
Mail List virtually eliminates costly labor expense and the tedium of constantly dealing with a mailing list. ML offers 11 fields of data input relating to each name as defined by User. Mail List employs search function, zip code and alpha sorts, accesses TI Writer, has a 40 column text mode, edits data before entry, and many additional functions. This mail list does just about anything imaginable for data manipulation.

**ACCOUNTS RECEIVABLE**
Invoicesinvoicesinvoices. If they all seem to run together, AR has the answer. This system allows you to maintain a Customer Master File. Maintains records by invoice number and keeps an invoice on file indefinitely until it is paid. AR is additionally posted to GL at month-end assuring balance or ease of error tracing. Reports include customer list, monthly statements, aging reports, and journal reports.

IN STOCK!

## CORCOMP 9900 MICRO EXPANSION SYSTEM

*THE WAIT WAS LONG, BUT NOW IT'S HERE!!*

COR 107 $324.95 *(Does not include disk drive)*

The term MICRO definitely fits the small black box measuring 5" x 5" x 3" which can replace the TI Peripheral Expansion Box measuring 17" x 12" x 7". This amazing box is being credited with making the 99/4A a portable computer! The console, 9900 MICRO EXPANSION SYSTEM and half-height drive fits easily into a briefcase or suitcase! Another exciting feature is that there is no longer the constant "hum" of the old P-Box fan!

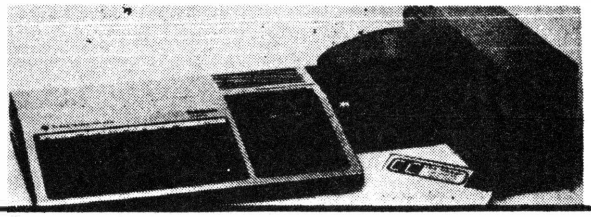
With the additional memory and the new CorComp Double-Sided, Double-Density Disk Controller capability, the user can control up to 4 disk drives. Each Double-Sided Double-Density drive will store 360k bytes of information. With two DS/DD drives hooked up the on line storage is 720k and with four DS/DD drives, it is increased to 1.4 megabytes. Tests to date have shown that the CorComp 9900 MICRO EXPANSION SYSTEM runs even faster than the 9900 Disk Controller for the TI P-Box.

The CorComp 2.3 Disk Manager is supplied on 5¼" floppy disk. This program is considerably faster than TI'S. It's the same Disk Manager which met with rave reviews when CorComp introduced the 9900 DS/DD DISK CONTROLLER CARD. One of the many enhancements of this program is that it allows the user to CONFIGURE the manager to his system. He can select his own text and screen colors, set up each of the different drive types attached to the controller for number of sides, density and number of tracks. The printer type can be configured for catalog and disk test printouts. The configuration is saved on the disk and used as the defaults when the disk manager is loaded

The CC-Disk Controller also adds eight new commands and programming statements to BASIC and Extended BASIC.

Revolutionary is the word being used to describe the CC-9900 MICRO EXPANSION SYSTEM. The small black box offers the most compact and practical approach ever available for expanding the 99/4A!

**COR 103 RS232 Stand Alone with 1 Serial and 1 Parallel Port ..... $124.95**
**COR 108 Upgrade Kit for 32K Ram and Disk Controller ..... $259.95**
*(Includes Extended Factory Installation Warranty)*



# RESPONSE HAS BEEN TREMENDOUS ...

## MICROSOFT MULTIPLAN

$39.95

PRICE BREAKTHROUGH CONTINUES!

**This may be the only computer program you ever need!** Recognized as one of the most powerful planning tools ever invented, MICROSOFT MULTIPLAN is patterned after the famous VISICALC program. MULTIPLAN can be used as a spreadsheet or record keeping tool for business and personal needs to plan everything from how much to spend on the lawn this spring to providing analysis for a small business. Printer system suggested.

*Requires: Memory Expansion, Disk System*

**PHM 3113 ..... $39.95**

LOWEST PRICE EVER!

## TI WRITER

$54.95

**PHM 3111**

This is our lowest price **ever** on this professional quality word processing program for the 99/4A only! TI Writer provides many of the features found on word processing systems costing thousands of dollars. Users create, define, save, format and print documents. Has both word wrap and fixed abilities. TI Writer is regarded as one of the finest programs ever written for the TI Home Computer.

VISA MasterCard

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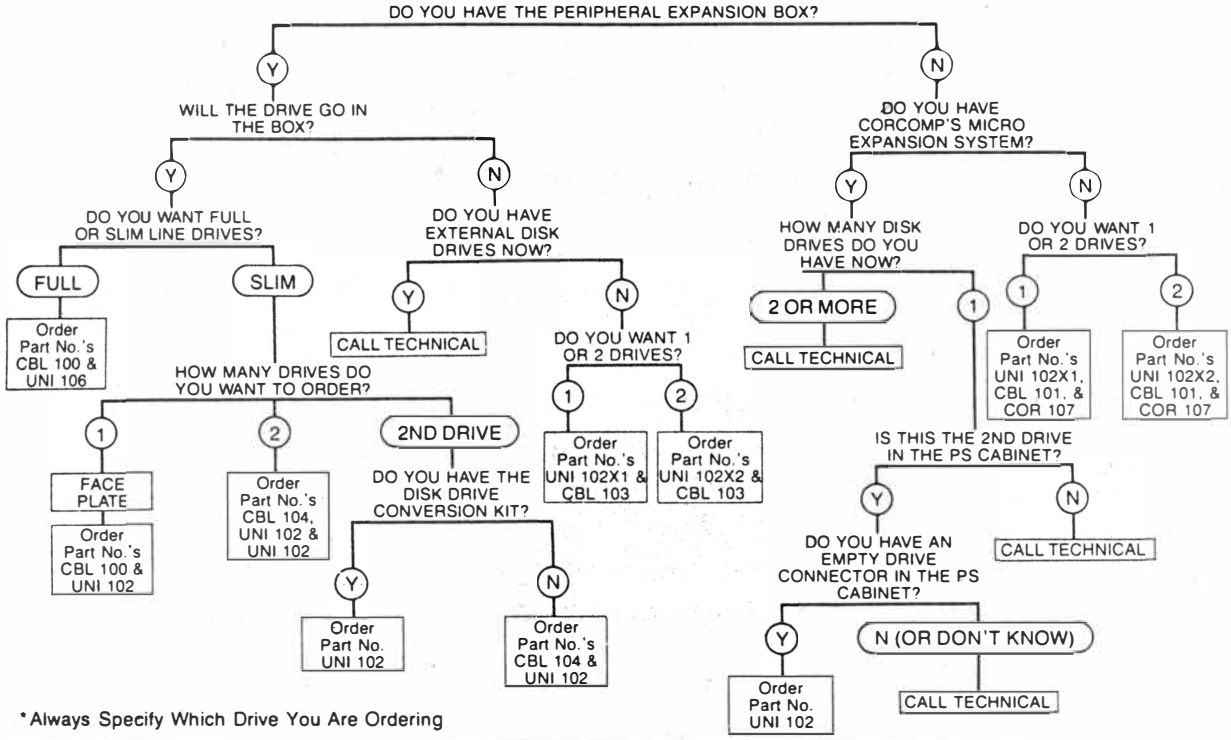
# CHOOSING THE RIGHT DRIVE FOR YOUR TI 99/4A SYSTEM

With the diversity of the TI 99/4A, it is sometimes difficult to determine the best, most cost-efficient disk drive configuration for your system. We've attempted to simplify the whole situation with this easy to read route that is correct for your computer. When you get to a □ (box) you know which part numbers to order. You will find part numbers and prices below the flow chart. It's that easy! Order today!

## "I WANT TO BUY A DISK DRIVE"*




*Always Specify Which Drive You Are Ordering

# COMPLETE EXTERNAL DS/DD DRIVES - READY TO USE!

## *"Nearly a MB of Storage with Two Slim Line Drives"*

These external disk drives are ideally suited for usage with any disk controller card that can control one or more double sided, double density disk drives.

At long last, affordable disk drives are available for your TI 99/4A and are fully compatible with all storage devices — TI, CorComp, Myarc, etc.

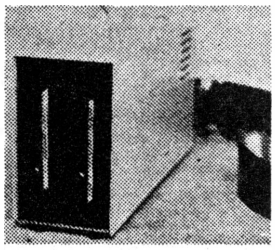
Either one or two of these slim disk drives has been installed in our power supply cabinet. Each of the drives are double sided, double density—that's 360 KB with one slim drive or nearly 1 MB of storage capacity with two slim line drives!

With computing power so readily available from these quality Teac manufactured drives, now is the time to buy.

*Requires: Console, Disk Controller Card, 32K recommended.*

**UNI 102X1** - One slim line DS/DD drive with power supply cabinet and cables ..... **$249.95**

**UNI 102X2** - Two slim line DS/DD drives with power supply cabinet and cables ..... **$399.95**



## DRIVES FOR THE PE BOX

### EXPANSION PERIPHERALS!

**Disk Drives** — All disk drives sold by Unisource are guaranteed to be 100 percent compatible with the 99/4A Home Computer. All of these drives are ideally suited for the Peripheral Expansion system as well. Drives may be purchased either as a single drive "bare"—ready for insertion into the PE box—in single sided, single density or double sided double density if your disk controller card will control DS/DD, or the drives may be purchased "slim line bare"—meaning two drives will fit into the same opening of the box. These slim line drives may also be purchased single sided, single density or double sided, double density, again depending upon your disk controller card and do require an electrical conversion kit.

Requires disk controller, peripheral expansion box or disk drive power supply, cabinet and external drive cable.

**UNI 106 Single Sided Single Density (Full Height Drives)**
*(Please specify if this is a second drive)* .. **$169.95**

**UNI 102 Double Sided Double Density (Slim Line Drives)**
*(Please specify if this is a second drive)* **ea.** **$179.95**

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## ADDITIONAL PERIPHERALS FOR THE HOME COMPUTER

**Disk Drive Power Supply Cabinet** — This is a complete power supply and cabinet designed to house either one full height disk drive or two slim line drives. Requires: Disk drive, disk controller, external disk drive cable.
**UNI 196** ..... $59.95

**Disk Controller Card** — Manufactured by CorComp, this disk controller card will handle up to 4 double sided, double density disk drives and allows for multiple disk drive configurations. Requires: Peripheral expansion box, internal disk drive cable, 1-4 disk drives.
**COR 102** ..... $159.95

**32k Memory Card** — Add 32k bytes of additional computing power to the console's 16k random access memory (RAM). This is a must for fully expanding the 99/4A's capabilities to run software like Extended BASIC, Mini Memory, Editor Assembler, TI-Writer and Microsoft Multiplan. Requires: Peripheral Expansion Box.
**COR 104** ..... $109.95

**RS232 Card** — Provides necessary interface for either a serial or parallel printer or telecommunications modem. Purchase in conjunction with the printers on pages 4 & 5 for outstanding savings! Requires: Peripheral expansion box and either printer or telephone modem.
**COR 101** ..... $99.95

***Prices, specifications & availability are subject to change. Please call for current price information.***

**Stand Alone RS232** — This is a low cost RS232 device for either a printer or a telephone modem that does not require the expensive Peripheral Expansion Box. Plugs directly into the side port and provides one serial and one parallel port.
**COR 103** ..... $124.95

**Free Standing 32k device** — Accesses those programs requiring additional 32k memory without having to purchase the expensive Peripheral Expansion Box! Manufacturer varies, but this device is always compatible, and plugs directly into the side port of the computer.
**BOX 100** ..... $129.95

**Speech Synthesizer** — The Solid State Speech Synthesizer reproduces human speech electronically, accurately and realistically with a variety of inflections and appropriate pitch. For children too young to read the screen, the Speech Synthesizer is ideal since it allows the computer to "talk" to the children. The Speech Synthesizer requires either the Speech Editor, Terminal Emulator II command cartridge or other programs designed to use speech. The TEII package provides unlimited text-to-speech capability which allows you to listen to data base information or have the computer say anything within your own program.
*Required: Terminal Emulator II Module, or other software that uses speech*
**PHP 1500** ..... **CALL!**

# Contents


## MICROpendium

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Telephone: (512) 255-1512
Source: TI4596
John Koloen..... Publisher
Laura Burns ..... Editor


## Coming Next Month

—More on Forth
—The "Techie" BBS
—A review of PC Keys

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# Table of Contents


## Home computer slump hits the CES

Displays are downsized, hucksterism is gone, but a few hopeful signs remain for the TI user.....Page 14

## Myarc announces XBIV

New Extended BASIC cartridge set for July, requires 128K card.....Page 18

## Programming the SUPER CARTridge

The second of two articles on how to make and use your very own cartridge.....Page 22

## Download characters to your Gemini

Some tips from the Tigercub.....Page 28

## CorComp's new PEB card

The Triple Tech includes a clock/calendar, a 64K printer buffer and a location on which to attach a TI Speech Synthesizer board.....Page 30

## M & T Utilityware changes name

A software company turns to shareware.....Page 32

## Reviews

Acorn 99.....Page 36
Advanced Diagnostics.....Page 39

## Freeware (or nearly so)

Our offers, and those of others.....Page 41

## Newsbytes

Navarone sets a user testing program, Not-Polyoptics announces disk versions of its two most popular games, and a program to communicate with the IBM PC.....Page 42

## User Notes

More on those heat sinks, handy gadgets from Radio Shack, and a text buffer for acoustic modems.....Page 43

## Classified.....Page 46

# Comments

# On Freeware; and a graphics contest

We've decided to publish the Freeware page in every other issue, starting next month. This reduction in frequency opens up an 'extra' page in every other issue for other articles. We're doing this because most of the Freeware offerings have been publicized by us for months and many readers may be tired of seeing the same old stuff month after month. We hope this meets with your approval.

In a related matter, we've been hearing some negative feedback regarding the Freeware concept. There are those who feel that giving away programs will do more damage to the TI market than software piracy. To paraphrase one complainant, there is a tendency to produce clones of programs that took the original authors months to develop. Although the clones are not copies and thus not infringing on copyrights, there are those who believe that there is no surer way to discourage future innovation than to allow others to market at reduced rates or give away programs that essentially capitalize on someone else's idea and labors. Not allowing the original programmer to recoup his investment of time and effort through substantial sales will discourage him from creating other innovative programs.

This is a plausible argument, and it is similar to that used against pirates. I cannot disagree with it in so far as I believe the original author deserves to profit from his work. Arguments against it range from the economic (many such programs are priced too high) to the nature of Freeware (one person providing a public domain program to another at little charge). Your thoughts on this subject would be appreciated.

### Z80A: PART II

Foundation Computing promptly returned my Z80A card (see last month's Comments column) and it works just fine. Bill Hunter of Foundation said that a few of the cards went out with bugs and one of these was sent to me. The Z80A card I now have initializes disks just as it is supposed to. I've also just received some software for the card--Word Star, MBASIC and Turbo Pascal among others--and I hope to have a more comprehensive report next month. The Word Star is formatted for a Kaypro computer. (So far, I've had only enough time to load each program. They all work fine.)

### CES UPDATE

Elsewhere in this issue you will find a report on the Consumer Electronics Show held last month in Chicago. The most interesting revelation for TI users is the marketing of Extended BASIC II by Myarc Inc. (You'll find the scoop on this inside, too.)

Perhaps more important are a couple of items that were not shown on the floor at CES, among them Tex Comp's peripheral devices that were previewed in last month's MICROpendium. These were displayed to a select few backstage, as it were. Also, a source tells us that Texas Instruments was at the show, too. According to this source, TI was also displaying an item that may be of interest to TI users. The company was apparently displaying a CC40-like machine to an invitation-only audience. We have no specifics on this, but our source indicates that TI may bring this machine to market by December.

And what the debut of a new TI-compatible computer? There was nothing shown on the floor, but the word I have is that things are still moving forward. I expect to hear more about this machine later this summer, perhaps in time for the August edition. You may notice that an advertiser in this month's edition is promoting a new machine to be released soon. I don't know whether this is the same machine I've been referring to for these many months, but the timing seems to be right. Stay tuned.

### A GRAPHICS CONTEST

We've had several software improvement contests, now it is time for a graphics contest. The rules on this are simple: using any graphics program available, entrants are asked to provide us with a printout (using a black ribbon only) of the best screen they can create. Judging will be based on clarity of image and faithfulness of representation. Judging will be done solely on the basis of submitted printouts. Cash prizes of $50, $25 and $15 will be awarded for the first, second and third place entries. All entries submitted will be considered to be the property of MICROpendium and may be published in a future issue. Entries should include the name of the program used to create the image as well as a title for the image, the creator's name and address. All entries must be postmarked no later than Sep. 20, 1985. Send entries to: GRAPHICS, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

—JK

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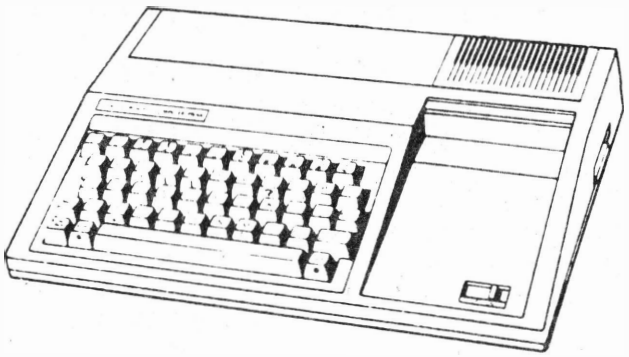

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# Feedback

## Getting around faults

I share with Bob Limberg his annoyance at the inflexibility of TI-Writer's formatter [Feedback, June 1985]. Although I do not know how to modify the program to solve its faults, I have been able to use the following methods to get around them.

First, the problem of two spaces always being printed after a period can be solved with TI-Writer's transliterate (.TL) function. For instance, if the greater than symbol (SHIFT .) is not used elsewhere in the text, use .TL 62:46 to cause the greater than symbol to be printed as a period. Then, use the greater than symbol in place of the period whenever the period is to be followed by only one space, as with abbreviations within sentences.

As Mr. Limberg noted, the caret, or required space character, can be used in place of the space after the period to prevent a second space from being printed. This will, however, link the word before the period with the word after the period so that the two words will not be broken between two lines—an undesired effect which can detract from the neat appearance of fully-justified text.

In regard to the second problem, the program's refusal to hold two spaces after a non-space character, typing one caret and one space will effectively cause two spaces to be printed. (Using two carets would cause the two words to be linked and treated as one word for formatting purposes, causing the problem described above.) The only drawback to this solution is that if the words before and after the caret and space are broken between two lines by the formatter, the caret will cause one space to be printed at the end of the line, making the right margin slightly uneven.

Modification of the program would certainly be a better solution to these problems. Both the Text Editor and Text Formatter would require modification, though, since the Text Editor deletes any trailing spaces on each line when saving a file, and the Text Formatter creates the problems described by Mr. Limberg.

**David J. Stuit**
**Alta Loma, California**

## Questions answered

[Regarding questions in the June 1985 Feedback column], in answer to Claire Roberts....I ran into the same problem in trying to print more than 80 characters on my Prowriter, and finally found the answer on page 139 of the Extended BASIC manual (mentioned in passing on page 11 of the TI RS232 interface card instructions).

"...you may specify a maximun length of a record by following VARIABLE or FIXED with a numeric expression. The maximum record is dependent on the device uses....the default is 80 for diskettes, 64 for cassettes, 80 for the RS232 interface and 32 for the thermal printer."

If you know that each line will have 132 characters, you can use fixed 132, but if the line length may vary, use variable 132, which allows up to 132 characters on a line. For the parallel port, my open statement is: "OPEN #1:PIO, VARIABLE 132"

Without this, no matter what else you do, the computer is telling the printer to put only 80 characters on a line.

In answer to Stanley Page's question, I have had similar problems with my console, and have found that disassembling the console and cleaning the contacts of the cartridge connector and the interface cable really helps. Use tuner cleaner or video head cleaner/degreaser for all the contacts, and a pencil eraser can be used to clean the contacts that are part of the printed circuit board.

**Nick Eckhardt**
**Hollister, Florida**

## DBM documentation

In the June 1985 issue of MICROpendium I noticed a statement referring to the Data Base Management package from Navarone Industries. The article indicated that Navarone's initial documentation for this package was poor and that a new release was available from Navarone for an additional charge. I would like to clarify this statement for all of your readers. Navarone goofed by not having adequate documentation ready when Data Base Management was first released. Since our users waste no time in letting us know when we do something wrong, we started rewriting the documentation that same week. The new documentation is available to registered users at NO CHARGE. Also, in that same article, the problem associated with inputting printer specifications has been corrected in an updated version of Data Base Management. This is also available from Navarone for a minimum charge to cover media and shipping. Any of your readers wishing to update their Data Base Management package can give us a call (209/533-8349) or write us at 19968 El Ray Lane, Sonora, CA 95370. We'll mail out your update the same day.

**Will Hadley**
**Director of Marketing**
**Navarone Industries**

## Brand comparisons

I thought your readers might enjoy the following little programs. I've had a lot of fun with these over the years. They can certainly get owners of "other" brands disturbed if nothing else!

The first program is used to find the perfect squares between 1 and 100. As we all know, there are 10 of them—1, 4, 9, 16, 25, 36, 49, 64, 81, 100. For the TI, this program presents no challenge, BUT try it on some of the other well known brands and you might get a surprise.

```
100 FOR T=1 TO 100
110 IF SQR(T)<>INT(SQR(T)) THEN
130
120 PRINT T
130 NEXT T
```

**(Please turn to Page 12)**

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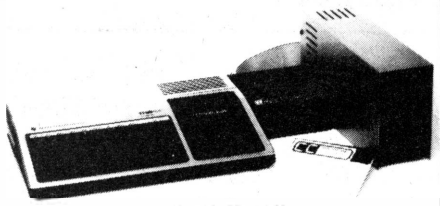

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# Feedback

(Continued from Page 10)

This next one is also quite interesting and does a nice job of showing off the "power" of the TI99/4A. Most everyone has a pocket calculator with a X! (factorial) key on it. If you have ever played with it at all, you know that 69! is the highest value it will compute. Well, a computer shouldn't have too much trouble with that—or should it? Try this next one—again, on your TI, then on a friend's competing brand. Your friend will be disappointed—again!

```
100 N=1
110 FOR T=1 TO 69
120 N=N*T
130 PRINT T;N
140 NEXT T
```

Using Extended BASIC's IMAGE command, you might like to experiment a bit and see what the upper limit for the TI is.

**Alan C. Fox**
**Regina, Saskatchewan**

## From Korea

Being stationed overseas in the Republic of Korea, we do not get the chance to find very many good magazines that cater to the TI computer. Yours is indeed a welcome sight to see every month in the mail box.

In your January 1985 issue on page 36 you printed a program by James Shregardus of Wisconsin. The program runs the way it appeared in your listing; however, it does have two minor bugs in it. First, the image statement in line 190 should read; 190 IMAGE "AVAILABLE = #### USED = #### ########". This provides the correct size when you have double-sided, double-density disks. The original format would print out *** for any number larger than 999. The next error is located in line 320. Towards the end of the line you will see TYPE$(ABS(A(1))) : this is incorrect and should read: TYPE$(ABS(A(2))) . This was causing a hard-to-notice fault in the type of program listed on the label. If the type printed on the left was an INT/FIX, then the type printed on the right came out the same regardless if it was or not. I must compliment James, however, on a very useful program that I have been using constantly.

**Glenn D. Knight**
**SSgt, USAF**

## Power supply

Soon after I bought my first disk drive, I got tired of pushing things out of the way to put disks in the drive. I now have two external DS/DD Tandons (which are sitting where I can get at them) and an empty hole in the PEB. I saw an article in your magazine (May 1985) for a hard disk controller available from Myarc. Can I put an internal hard disk in the PEB running on the controller card? I have seen MB hard disks selling as low as a hundred dollars. Can the power supply in the PEB take the load? (I noticed that it is rated at 115 VAC and 1.25 Amp). If it cannot, could an IBM replacement power supply be used? These are usually rated from 130 to 160 watts.

Also, I tried the suggestion given in "Too much heat" (March 1985). The connection in the computer and on the power supply did not mate, so I had to make a short four-wire connection, but everything worked OK (at least for a while). After several hours of operation (with no coffee warmer!) the computer quit. I was in a panic, but I reinstalled the original power supply only to find everything was OK. The -5 V circuit on the new card had burned out. Let everybody know that if the computer fails with the new power supply, it may just be the new power supply itself.

**Robert L. Abernathy**
**Mesilla Park, New Mexico**

**We are not aware of a Winchester drive designed to fit the PEB. TI users are clever, however, and such an application may have been made. We recommend purchasing a hard disk drive with its own power supply and interfacing it with a controller card in the conventional way. A Winchester drive with power supply takes up about as much room as two full-height 5.25-inch floppy drives. It is doubtful that the power supply in the PEB could handle the power requirements of a Winchester.—Ed.**

## Zyolog boards

As I saw your article "Touring the Boards," by Ron Albright (March 1985), I thought I might tell you about another kind of TI BBS system. They are called the Zyolog boards, written by Bryan A. Willcutt. Zyolog I is run by Bryan Wilcutt on a 10-megabyte hard drive. It totals to have 12 megabytes! All the Zyolog systems have a wide variety of info files and message bases. They all feature TEII transfers, graphics, speech and music while you are using the BBS!

As of now there are three Zyolog boards:

Zyolog I, (808) 536-0998, 12 megabytes; sysop—Bryan Wilcutt, Honolulu, Hawaii

Zyolog II, (714) 669-9242, one megabyte; sysop—Matt Petty, Irvine, California

Zyolog III (305) 834-2530, two megabytes; sysop—Blaine Richard, Fern Park, Florida

I think there might be two more on the rise but I am not sure at this point.

**Matt Petty**
**Tustin, California**

---

**The Feedback column is for readers. It is a forum to communicate with other readers. The editor will condense excessively lengthy submissions where necessary. We ask that writers restrict themselves to one subject for the sake of simplicity. Our only requirement is that items be of interest to persons who use the TI99/4A home computer. Mail Feedback items to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.**

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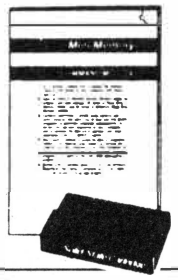

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# Home computer slump reflected at Consumer Electronics Show

By DAVE WAKELY

As a TI computer user living in the Chicago area, I have had the opportunity to attend the past three Consumer Electronics Shows.

This annual event is the counterpart to the winter show usually held in Las Vegas in January, and both are designed to allow the electronics manufacturers to exhibit their new wares to the network of electronics retailers and to the press.

For the past several years, the personal computer exhibitors at the CES have been housed in a building apart from the video, audio and other electronic gadgets which could be found in Chicago's giant McCormick Place, the exposition and trade show center located just south of the loop. Over these years one of the largest exhibits has belonged to Texas Instruments. This year, however, TI chose to set up a display only in the main hall, showing mostly calculators and educational aids such as "Speak and Spell."

Many other changes could be observed in Donnelly Hall, the personal computer "wing" of the CES. Reflecting the well-documented slump in the home computer industry, the number and size of nearly all displays was noticeable reduced this year. Gone were such former CES newsmaker as Coleco, which had some time ago announced the demise of its Adam home computer, and both Timex and Mattel, whose computers have also become shakeout casualties. The long-threatened Japanese invasion of interchangeable MSX machines once again did not materialize, but now amid talk that the right time for such a takeover of the market has long since passed, and may, in fact, never occur. The air also seemed filled with talk that if IBM can't make it in the home market (a reference to the newly defunct PCjr), who can? In past years the home computer exhibits have filled all three levels of Donnelly Hall, but this year at least half of the basement level was taken by the booming home video market, where "PG," "R" and even "X"-rated videotapes were on display for the VCR rental market.

Among software vendors, Broderbund "downsized" its display considerable from previous years, while both Infocom and CBS software chose not to exhibit at all. Perhaps reflecting the year-long slump in home computer hardware and software sales, the energy level in the home computer section seemed to this reporter to be also noticeably reduced. For example, largely missing were the traditional signs of hucksterism such as the scantily clad females who used to lure customers to the exhibits of software houses such as Datamost.

The long-rumored TI-compatible computer which was reportedly ready to make its debut at this CES was a no-show. According to information circulated to TI user groups and others by Ryte Data of Ontario, Canada, and reported in previous issues of MICROpendium, an unnamed hardware manufacturer had completed preliminary work on an improved home computer which is 100 percent compatible with the 99/4A. Some have claimed that Myarc Inc. of Basking Ridge, New Jersey, is the manufacturer, but Myarc has never confirmed this. The few individuals at the CES who were familiar with the TI denied any knowledge of such a new machine. One rumor circulating among TI users at the show had it that Myarc would be demonstrating the new computer at the Navarone Industries booth, but Chuck Humphrey, Navarone president, denied this.

Gone from this year's show were Romox, the company which had promised reprogrammable TI cartridges, but which instead has reportedly gone under, and Databar, which briefly brought out the OSCAR bar code reader. Personal Peripherals Inc., manufacturer of the popular Super Sketch drawing pad, also did not exhibit this year.

Many reasons may exist for the collapse of consumer interest in home computers, with some industry observers noting the public perception that they still presume too much knowledge on the part of the user, and that the range of applications is too limited, considering the cost. This show gave evidence, however, that the consumer electronics industry is certainly more than just computers. Currently generating the most interest is home video. The VCR manufacturers all featured large displays of the newest models, with industry estimates of home market "penetration" of up to 25 percent. VCR "peripherals" such as cameras, camcorders and minicameras are all setting the type of sales records which home computer peripherals did in 1982 and 1983. Several industry sources were quoted during the show as predicting color TV sales once again to top 16 million units for the year. By contrast, some recent surveys reported in Computer Software News (an industry trade magazine), noted that about eight percent of consumers contacted indicated the intention to purchase a home computer in the near future. This is down from about 14 percent in January 1984. These surveys also showed an ac-

(Please turn to Page 16)

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# SOME HOPE SHOWN FOR TI-USERS—

(Continued from Page 14)

tual reduction in the installed base of home computers, with about 10 percent of households reporting owning a home computer in February of 1984, while by December of the same year the number had shrunk to only seven percent. One explanation for this is that some owners had just "forgotten" about their computer since it had been retired to the closet. The authors of the survey noted that this agrees with estimates by Infoworld Magazine that up to half of all home computers have been put away by purchasers.

In consumer audio the big sellers are the new compact disk players. Several manufacturers, almost all Japanese firms, were showing CDs with a suggested retail price of about $300. These players, which noticeable increase the quality of audio recordings, are even beginning to appear in the portable "boom boxes" and in car stereo systems. In all, the CES organizers reported that more than 1,300 exhibitors had registered for this show, and attendance was expected to exceed the record of approximately 100,000 persons.

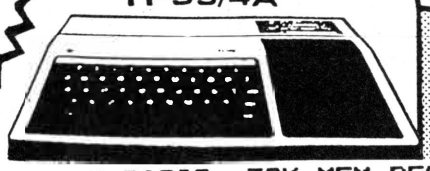
Now that this article has presented the "downside" of the home computer popularity slide, can anything of encouragement be said to the 99/4A user? There were a few TI consoles in evidence at the CES, exactly three of which I managed to find. Keystone Distributing Company, a computer wholesaler which supplies many of the advertisers in this publication, set up a large booth showing several TI systems. The previously mentioned Navarone Industries, perhaps best known for its "Widget" cartridge expander, was showing its line of TI modules, including the new Paint 'N Print, a program which rivals the Super Sketch in drawing capability. TI users seemed to congregate around the Navarone exhibit each day, apparently due to the Myarc rumors, and their staff should be commended on their patience in answering questions which often had nothing to do with their products.

Competition Pro, a division of Coin Controls Inc., was exhibiting a line of joysticks for a variety of computers, including the TI. They had Parsec running on a somewhat beat-up old 4A console which was missing its silver trim.

Among computer publications of interest to the TI user, Compute! magazine, still featuring some 99/4A material, was in attendance, as was Computer Shopper, a tabloid-looking monthly which features a TI column by Randy Holcomb, sysop of the TI Forum on Compuserve.

(Please turn to Page 18)

NEW FOR TI-99/4A



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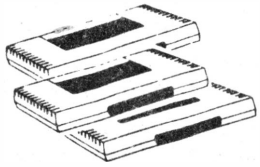

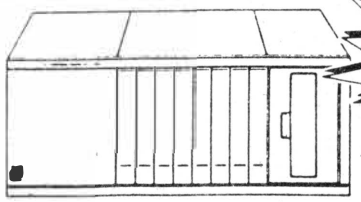

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## CES—

(Continued from Page 16)

Those home computer manufacturers who have survived the crisis so far have attempted to sustain the market with some new machines. Much in evidence at the show was the new Commodore 128, a successor to the popular Commodore 64. This product is being marketed as three computers in one. It features complete compatibility with the older 64 when in C64 mode, using a 6510-compatible microprocessor, and can also run new applications in C128 mode, using an 8502 processor, 48K ROM, a new BASIC and support for RGB monitor output. The machine also supports CP/M via yet another built-in microprocessor, this one a 2.04 MHz Z80A. Many software developers had their products running on this machine. Commodore has generated much news in the past six months,

(Please turn to Page 20)

# Myarc announces XBIV

On Tuesday afternoon of the four-day show, some unexpected news for TI users finally appeared at the Navarone table. A single sheet, carrying the Myarc Inc. logo, announced the upcoming release of "Extended BASIC, Level IV."

The somewhat fuzzy picture of what appeared to be a command module was accompanied by a description of a "128K operating system" which is 100 percent compatible with TI Extended BASIC and features windowing, 40-character text display, up to three times the speed of Extended BASIC, graphics commands such as draw, circle, fill and rectangle, improved error-handling routines and integer variables.

Also described was a 32/128K memory expansion and a RAM-disk card which apparently may be purchased as a 32K card, allowing the user to upgrade to RAM-disk later.

MICROpendium has since learned that the new Extended BASIC cartridge, which Myarc's Lou Phillips referred to as Extended BASIC II, will be shipped in July and will carry a suggested retail price of $84.95. However, operation of the cartridge requires use of Myarc's 128K card. The cartridge comes with a diskette.

Phillips notes that Myarc will be announcing the release of another product later this summer.


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In addition to a standard large smooth bold alphabet and number set, Banner-99 also includes a set of custom characters to add additional interest and excitement to your banners, signs and bumper stickers. For example, a heart is included to make the famous "I ♥ my _____" signs, a Cross and a Star of David are included for religious holidays and special observances. Use this software to start your own business making banners.

Easy-to-follow instructions are included so you can immediately start turning out beautiful banners, signs and bumper stickers. Just put in the disk and type your message using any symbols on your keyboard, and a special custom graphics. **Presto!** An instant banner emerges from your printer!

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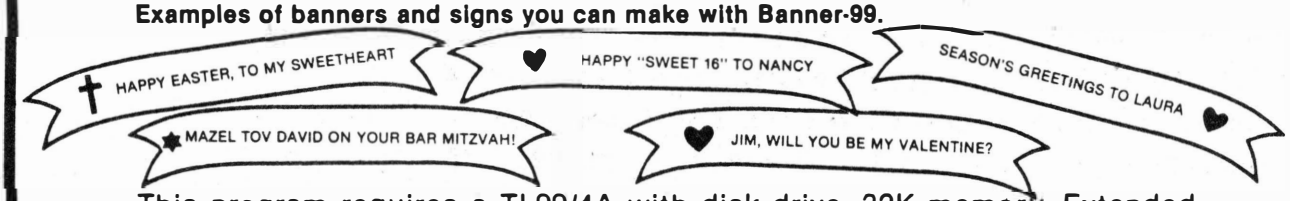


This program requires a TI-99/4A with disk drive, 32K memory, Extended Basic and printer.

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# SOFTWARE RUN ON VARIOUS MACHINES—

(Continued from Page 18)

beginning with the departure of founder Jack Tramiel in January. Despite reports of near dominance of the home market, Commodore recently reported losses of $20.8 million in the quarter ended March 31, but hopes to return to profitability by early 1986.

Talk at the show suggested that some of the trouble at Commodore may be reflected in their failure to bring to the CES the Macintosh-like Amiga computer which they had previously announced.

Atari, dumped by Warner Communications and purchased by Jack Tramiel, had announced just prior to show time that they would not be exhibiting at this CES. As it turned out, however, Atari displayed several of the new ST line of computers in a small meeting room which was constantly jammed during the show. This machine is so similar in concept to the new Apple that it has been dubbed the "Jackintosh." It was impossible to get far enough into the room to see one, however.

While both the Commodore Amiga and Atari ST machines are often described as the future of home computers, many software vendors at the CES were displaying their wares on IBM PCs, jrs, Apple IIes, IIcs and Macintoshes. It should be noted that IBM and Apple have not exhibited at CES, preferring to pitch their products to the business user. Some industry sources have been quoted as saying that the home computer market may not become viable again until these powerful new machines achieve a certain market segment, and this is expected to take a minimum of two to three years. Then home computer users can expect to see enhancements such as 500-MByte read, write and erase compact disk players used as data storage devices, and, as some have ominously stated, probably in a system which is Japanese-designed.


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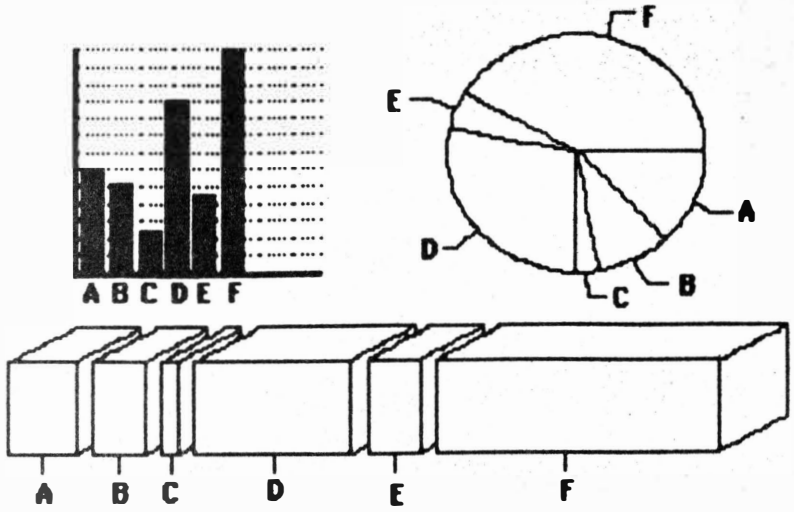


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## Banner 99

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**SPECIFY DISK OR CASSETTE VERSION**

# Programming SUPER CARTridge gives users new opportunities

*[Editor's Note: For information on creating the SUPER CARTridge, see John Clulow's article in our June issue.]*

**By DAVID R. ROMER**

You can alter assembly language software so that it may be run out of your RAM chip enhanced Editor/Assembler cartridge (SUPER CART) as a powerup menu selection.

Using information in this article, in essence you will be able to create your own cartridge, containing your own programs, runnable at the press of a single key.

The basic steps to convert software for SUPER CART use are:

1. Move DEFinition statements to the beginning of the program.

2. Absolute ORGin the program at >6000.

3. Substitute stand-alone routines for external REFerences to cartridge utilities.

4. Add the CARTRIDDGE HEADER to the source code so the powerup routine will place your program on the menu screen.

To take a closer look at these steps let's examine the following example program called TEST. If you enter, assemble and load program TEST into your SUPER CART, selection 3 on the menu screen should say "MENU TEST". When 3 is pressed, the screen will clear and the text "MENU TEST PROGRAM" will be displayed briefly, followed by a return to the color bar screen.

```
   ****************************
   * SUPER CART TEST PROGRAM *
   ****************************
1          DEF  TEST                define label TEST as program name
2          AORG >6000               absolute code atarting at >6000
3          DATA >AA01               start of CARTRIDGE HEADER,value >AA01
4          DATA 0                   must be at address >6000
5          DATA 0
6          DATA MNULNK              pointer to first menu table entry
7          DATA 0
8          DATA 0
9  MNULNK  DATA 0                   1st menu table entry, DATA 0 = single entry
10         DATA ENTRY pointer to    start of program
11         BYTE >09                 length of text to be displayed on menu scrn
12         TEXT 'MENU TEST'         actual menu text to be displayed
13 ENTRY   B    @TEST               branch to start of program
   ****************************
14 WS      BSS  32
15 MASK    DATA >4000
16 MSG     TEXT 'MENU TEST PROGRAM'
17 TEST    LWPI WS
18         LI   R0,263              screen location for display
19         LI   R1,MSG              pointer to text to be displayed
20         LI   R2,17               length of text
21         BL   @VMBW               go display it
   ****************************
22         LI   R1,>0A              delay loop while text is on screen
23 LOOP    LI   R0,>FFFF
24 LOOP1   DEC  R0
25         JNE  LOOP1
26         DEC  R1
27         JNE  LOOP
   ****************************
28         LWPI >83E0               load GPL workspace
29         BLWP @>0000              branch to color bar screen
   ****************************
30 VMBW    SOC  @MASK,R0            stand alone VDP multiple byte write routine
31         SWPB R0
32         MOVB R0,@>8C02
33         SWPB R0
34         MOVB R0,@>8C02
35         NOP
36 WLP     MOVB *R1+,@>8C00
37         DEC  R2
38         JNE  WLP
39         B    *R11
           END
```

Line 1 is the usual DEF statement setting the entry point or points to the program. DEF statements do not have to be at the beginning of a program as long as they precede the first reference to the DEF label. However, since the first reference to the entry point in our SUPER CART software will be in the CARTRIDGE HEADER, line 13 in TEST, it will be necessary to place the DEF statement first in the program.

Any external REFerences to utility routines must be removed from the program. Since there is no CALL INIT sequence prior to executing the cartridge program, utilities such as VMBW, KSCAN, DSRLNK, etc., are not available to your SUPER CART program. In a third article I will describe a routine that will make the cartridge utilities available to your SUPER CART program. Likewise, a program originally written to run from Mini-Memory will reference those utilities through EQU statements. Those EQUates must be removed from the source code. Since we are not in the Mini-Memory environment these routines do not exist at the EQU addresses. If the utilities are required in your SUPER CART program then stand-alone routines must be added to the source code. In our example program lines 30 to 39 are a stand-alone Multiple Byte Write routine used to display the text line 16 on the screen.

The 8K RAM chip you added to your E/A cartridge uses memory addresses >6000 to >7FFF. While a cartridge program could be located

**(Please turn to Page 24)**

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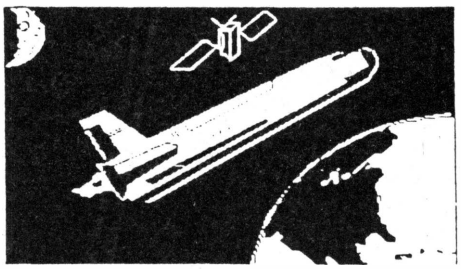

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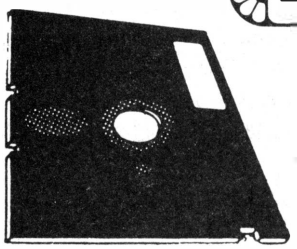

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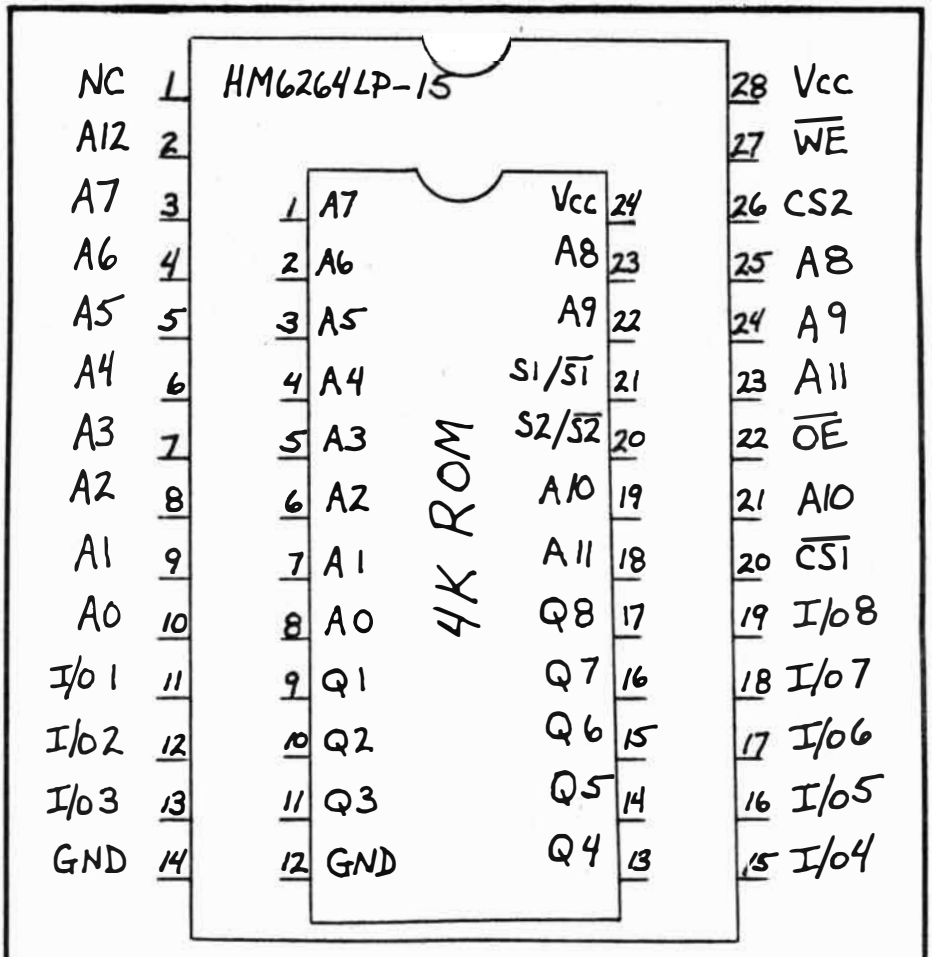
# SUPER CART—

**(Continued from Page 22)**

anywhere within those addresses, the CARTRIDGE HEADER must start at >6000. Since we are adding the HEADER to existing source code, an AORG >6000 statement, as in line 2 in TEST, will cause the LOADER program to place your program at that address so that it may be executed from the menu screen. All other AORG statements should be removed from the source code. Do not assume that DEF, REF, EQU and AORG statements occur only at the beginning of source code. You can save yourself some assembly time if you use the FIND function in the EDITOR to search all of the source code for occurrances of those statements.

Lines 3 to 13, in program TEST, make up the CARTRIDGE HEADER code that enables the powerup routine to include and execute your program from the menu screen. Lines 3 to 13 MUST load starting at >6000. The only source code statements that can precede the CARTRIDGE HEADER are DEF, AORG or EQU statements. In line 3 the value >AA will load at 6000 and tells the powerup routine that a valid cartridge is in the cartridge slot. The value >01 indicates that the cartridge contains executable machine code. Lines 4 and 5 set the next two memory words to 0. Line 6 can be any valid label and is a pointer to the first

**(Please turn to Page 26)**




Here is a diagram showing the ROM pin numbering from Super Cart. The drawing is not to scale. The ROM integrated circuit is superimposed on the HM6264LP-15. This diagram is in reference to the construction of Super Cart as described in last month's MICROpendium.

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# SUPER CART

**(Continued from Page 24)**

entry in the menu table. Line 9 is the menu table entry pointed to by line 6. In program TEST it is set to 0 as there is only one entry point into TEST. If there were additional entry points or multiple programs, line 9 would point to the next menu item (e.g. MNULNK DATA NXTLNK). The menu screen would appear to have room for seven or eight selections. Line 10 is a pointer to the start of the program. Line 11 is a byte value that is the length of the text to be displayed on the menu screen. Line 12 is the text to be displayed. Finally, line 13 is the Branch to the start of the program.

Once you have made these changes to your source code, assemble it, then load it into your SUPER CART with Opt. 3 LOAD and RUN on the Editor/Assembler menu.

You may also load your SUPER CART from TI-BASIC with CALL INIT then CALL LOAD("DSK1.YOURPROG"). Press Function Quit to return to the color bar screen, press any key and your program should appear as selection 3 on the menu. Forthose of you who maybe using the Cor-Comp disk controller and SUPER CART with a program having multiple entry points, you will find that the Cor-Comp screen will display only the first entry in the menu table. However, pressing the space bar twice will display the TI screen that will show all of the menu selections you have added to your SUPER CART. The best part of it is that your program will still be there ready to go until either the battery quits or you change the program.

Those are the basic steps required to alter software to run out of your SUPER CART. Some programs may require only the addition of the CARTRIDGE HEADER and others may

**(Please turn to Page 28)**

# SUPER CART PARTS LIST

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| HM6264LP-15 8K CMOS RAM TI Game Module. Must have metal contacts on BOTH SIDES of connector; e.g. Munchman, TI Invaders | (1) | Microproc. Unlimited | $8.85 |
| 1N914 Signal Diode | (2) | Rad Shk 276-1122 | .20 |
| 1K Resistor—¼ Watt | (3) | Rad Shk 271-1321 | .24 |
| 2.2 uF Tantalum Capacitor | (1) | Rad Shk 272-1435 | .59 |
| Red LED | (1) | Rad Shk 276-041 | .35 |
| Wire-wrap Wire | (1) | Rad Shk 276-503 | 2.39 |
| Lithium Cell | (1) | Rad Shk 23-160 | 1.79 |
| Coin-type Cell Holder | (1) | Digi-Key BH906-ND | 1.25 |

| Tools | Source |
|---|---|
| 25 Watt Pencil Iron | Rad Shk 64-2070 |
| Vacuum Desoldering tool | Rad Shk 64-2070 |
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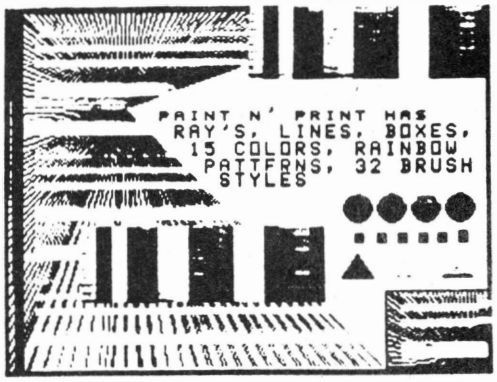


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# Download characters to your Gemini

The following program was written by Jim Peterson of Columbus, Ohio. Many TI users know Peterson as the author of the Tips from Tigercub column that appears regularly in many user group newsletters.

The program, called DOWNCHAR, permits on-screen design of downloadable characters for Gemini printers. It is also compatible with Epson printers. The program features a direct dump to the printer for viewing the newly designed character and optional saving to disk. Peterson released the program to the public domain.

```
100 CALL CLEAR :: CALL SCREE
N(4):: CALL CHAR(128,"FF8181
81818181FF",129,RPT$("F",16)
):: CALL COLOR(13,2,16)
110 FOR R=9 TO 15 :: CALL HC
HAR(R,11,128,9):: NEXT R
120 X=1 :: FOR R=9 TO 15 ::
DISPLAY AT(R,7)SIZE(2):STR$(
X):: X=X*2 :: NEXT R :: FOR
C=9 TO 17 :: DISPLAY AT(8,C)
SIZE(1):STR$(C-8):: NEXT C
130 DISPLAY AT(2,9):"TIGERCU
B'S" :: DISPLAY AT(4,1):"GEM
INI CHARACTER DOWNLOADER" !p
rogrammed by Jim Peterson fo
r the Public Domain
140 DISPLAY AT(17,1):" Move
cursor with W,E,R,S,D,":"Z,X
 and C keys. Toggle on":"and
 off with Q key. Press":"Ent
er when finished.": : :"Pres
s any key"
150 CALL KEY(0,K,ST):: IF ST
=0 THEN 150 :: CALL HCHAR(17
,1,32,224)
160 R=9 :: C=11 :: CH=128
170 CALL HCHAR(R,C,32):: CAL
L HCHAR(R,C,CH):: FOR D=1 TO
 10 :: NEXT D :: CALL KEY(3,
K,ST):: IF ST=0 THEN 170
180 ON POS("QWERDCXZS"&CHR$(
13),CHR$(K),1)+1 GOTO 170,31
0,230,220,210,200,190,260,25
0,240,330
190 R=R+1
200 C=C+1 :: GOTO 270
210 C=C+1
220 R=R-1 :: GOTO 270
230 R=R-1
240 C=C-1 :: GOTO 270
250 C=C-1
260 R=R+1
270 R=R-(R<9)+(R>15):: C=C-(
C<11)+(C>19):: IF CH=128 THE
N 300 :: CALL GCHAR(R,C-1,GX
):: CALL GCHAR(R,C+1,GZ):: I
F (GX<>129)*(GZ<>129)THEN 30
0
280 DISPLAY AT(22,1):"You ca
n't have two in a row":"hori
zontally!" :: FOR D=1 TO 50
:: NEXT D :: DISPLAY AT(22,1
):" ":" "
290 CH=CH-1
300 CALL HCHAR(R,C,CH):: GOT
O 170
310 CH=CH+1+(CH=129)*2 :: IF
 CH=128 THEN 320 :: CALL GCH
AR(R,C-1,GX):: CALL GCHAR(R,
C+1,GZ):: IF (GX<>129)*(GZ<>
129)THEN 320 ELSE 280
320 CALL HCHAR(R,C,CH):: GOT
O 170
330 FOR C=11 TO 19 :: X=1 ::
 FOR R=9 TO 15 :: CALL GCHAR
(R,C,G)
340 IF G=129 THEN A=A+X
350 X=X*2 :: NEXT R
360 FOR J=1 TO LEN(STR$(A)):
: CALL VCHAR(15+J,C,ASC(SEG$
(STR$(A),J,1)))):: NEXT J ::
M$=M$&CHR$(A):: A=0 :: NEXT
C :: A=0
370 DISPLAY AT(20,1):"Print?
 Y/N Y" :: ACCEPT AT(20,12)V
ALIDATE("YN")SIZE(-1):Q$ ::
IF Q$="N" THEN 470
380 IF F=1 THEN 390 :: F=1 :
: DISPLAY AT(20,1):"Printer
name?" :: ACCEPT AT(20,15):P
$ :: OPEN #1:P$
390 DISPLAY AT(20,1):"ASCII
to redefine?" :: ACCEPT AT(2
0,20)VALIDATE(DIGIT)SIZE(3):
CH
400 DISPLAY AT(20,1):"Descen
der (0 or 1)? 0" :: ACCEPT A
T(20,21)VALIDATE("01")SIZE(-
1):D$ :: D=VAL(D$)
410 M$=CHR$(27)&CHR$(42)&CHR
$(1)&CHR$(CH)&CHR$(D)&M$
420 PRINT #1:M$ :: PRINT #1:
CHR$(27);CHR$(36);CHR$(1);
430 PRINT #1:RPT$(CHR$(CH),7
2):: PRINT #1:CHR$(14);RPT$(
CHR$(CH),36)
440 DISPLAY AT(20,1):"Save (
Y/N)? Y" :: ACCEPT AT(20,13)
VALIDATE("YN")SIZE(-1):Q$ ::
 IF Q$="N" THEN 470
450 IF F3=1 THEN 460 :: F3=1
 :: DISPLAY AT(20,1):"Filena
me? DSK" :: ACCEPT AT(20,14)
:F$ :: OPEN #2:"DSK"&F$
460 PRINT #2:M$
470 M$="" :: DISPLAY AT(20,1
):"Another (Y/N)? Y" :: ACCE
PT AT(20,16)VALIDATE("YN")SI
ZE(-1):Q$ :: IF Q$="Y" THEN
100
480 CLOSE #1 :: CLOSE #2 ::
END
```

## SUPER CART—

**(Continued from Page 26)**

require extensive revision to substitute stand-alone utility routines. The possibilities are limited only to one's imagination and 8K of memory. By the way, this article was written with a SUPER CART containing the TK-Writer loader for TI-Writer. The menu screen has five selections:

1. TI-BASIC
2. Editor/Assembler
3. TK-Editor
4. TK-Format
5. TK-Utility

TK-Writer is a very easy conversion. You only have to add AORG >6000 and the CARTRIDGE HEADER.

## Chicago TI Faire set

The Chicago TI Users Group announces that it will hold its third annual TI99/4A Computer Faire Nov.2.

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A second benchmark program appeared in the November 1984 issue of the MICROpendium (page 22). This program took:

| | |
|---|---|
| 209.4 seconds in *TI BASIC* | 7.2 seconds in *TI FORTH* |
| 219.6 seconds in *TI EXTENDED BASIC* | 4.9 seconds in *WYCOVE FORTH* |

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- The ability to add up to five of your own commands.
- The ability to access a disk drive and the RS232 interface.
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## SST SOFTWARE, INC.

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# CorComp announces new PEB card

CorComp Inc. is introducing a new card for the Peripheral Expansion Box that provides a clock/calendar, 64-kilobyte printer buffer and a location on which to attach a TI Speech Synthesizer board, eliminating the need to connect the speech synthesizer box directly to the console. Called Triple Tech, the card carries a suggested retail price of $130, according to CorComp. The card is expected to be ready for shipment the end of July.

The clock/calendar is also available as a stand-alone unit that plugs into the side of the 99/4A console. Called 9900 Clock/Calendar, the suggested retail price of the unit is $81. It includes a load interrupt switch that can be used with some third-party screen dump programs.

The company is also releasing a 32K memory expansion unit called 32K Micro. This unit plugs into the side of the console. The clock/calendar and 32K Micro may be daisy-chained by the user. These black metal units measure 5 × 5 × 2½ inches.

The clock/calendar displays year, month, date, day of the week, hours, minutes and seconds. It features a crystal controlled oscillator that is accurate to .002 percent, according to the company. It is battery-backed and will operate for more than six months with power turned off. It is accessed through BASIC or Extended BASIC.

CorComp says the 64K printer buffer is "virtually compatible with any printer." It includes 64K of memory, a copy function for immediate duplication of printouts and a clear function to empty the buffer.

The Triple Tech card also has a location for attaching the speech synthesizer board. The user removes the board from the synthesizer, plugs it into Triple Tech and plugs the card into the PEB.

# Morning Star has new expansion board

Morning Star Software has announced a new 128K RAM expansion board which allows bank-switching up to 160K of memory or more, according to manufacturers.

The board provides 16 banks of 8K or eight banks of 16K plus 32K for 40K/48K expansion RAM online (64K total including VDP RAM), 166K/288 K total expansion memory.

Morning Star officials say the board must be used with 32K of RAM, either TI or Foundation 128K memory (which still functions as a disk emulator). It has two sockets for 8K/16K of EPROM and six modes of operation.

The board contains 128K of RAM plus sockets for two 8K ROM chips. It switches in either 8K or 16K in addition to the 32K card. Since it makes 40K or 48K available in the PEB at all times, it allows running larger programs than was formerly possible, according to the manufacturer. The facility for "bank switching" 16K at a time while 32K remain "resident" affords true program overlay techniques in programs up to 160K long.

The board is operated by selecting one of six software-controlled modes:

Mode 1—8K of ROM (type 2764 ultraviolet eraseable) is switched into the DSR space at >4000 to >5FFF and may be used to implement power-up and device service routines. CRU bit 0 enables and disables the ROM while CRU bit 4 selects the second 8K ROM for large DSRs. (See the Editor/Assembler manual for more information.)

Mode 2—8K of RAM (type 4164 dynamic) is switched into the DSR space instead of ROM. CRU bits 0 enables and disables the ROM so that other devices' DSRs may be activated. CRU bits 4..7 select one of 16 RAM banks for code and data selection in very large programs.

Mode 3—8K of RAM is switched into the cartridge space, >6000 to >7FFF. CRU bits 4..7 again select one of 16 RAM banks to be made available to other devices' DSRs. The RAM remains accessible in the cartridge space at all times with this space selected.

(Please turn to Page 32)

You saw the review in the pages of MICROpendium. GRAPHX is one of the most powerful, user friendly graphics programs available for the TI-99/4A Home Computer today. GRAPHX is available from THOMSON SOFTWARE (D.I.P.). Quantity buying permits us to lower our price below the suggested $50.00 retail price. Thru us the price is only $45.00 plus $1.50 S&H for single orders. Ordering thru us relieves you of the burden of converting money and sending it to Australia and waiting for the international mail system. We will fill your order and mail it the day after we receive your order when your requested version is in stock. Quantity discounts are available. Please call for quantity prices. Send your check or money order to:

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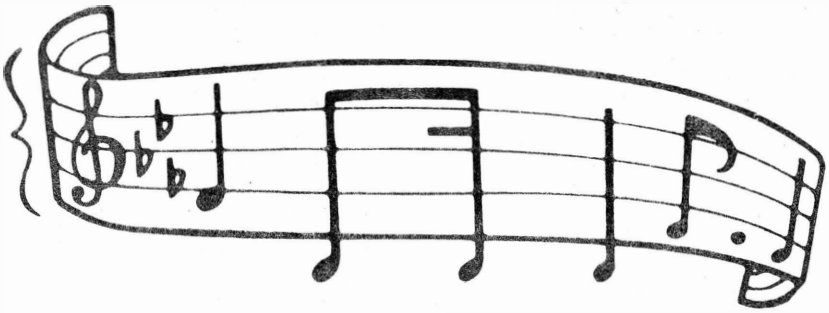

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**SPECIFICATIONS:**

| | |
|---|---|
| Voices | - 12 |
| Output Channels | - 2 or 4 |
| Voice Pitch Range | - Bass 1 octave below bass clef<br>Treble 1½ octaves above treble clef |
| Percussion Voices | - up to 4 combined bass and percussion voices may be defined within the total 12 voices. |
| Envelope Control | - amplitude updated 60 times/second in a range of 0-15. |
| Visual Feedback | - amplitude and pitch of all voices dynamically displayed. Current measure number may also be displayed. |
| Editor Display | - 64 column (monitor recommended) by 16 rows. |

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# M & T changes name, marketing

As of July 1, M & T Utilityware has changed its name to Thomson Software (D.I.P.).

Don Thomson says the name change is to make it known "that I own this company lock stock and barrel." He says that D.I.P. stands for "distribution incentive program," which he describes as "a modified form of shareware, not freeware."

Thomson describes shareware as a form of distribution in which the author of a program encourages people to distribute his programs. He notes that shareware is being utilized with the IBM PC.

For example, he says, "Let's say person A has legally purchased the program DISK+AID from me. He is what is known as a registered owner of the program and has a registration number that is assigned by me. If person A passes the program to person B, person B is encouraged to send in a $20 registration fee to me. If that happens, B will be assigned a registration number. Person A, because he has worked to get B to register his copy, will get a $5 Finders Award. For every program that A passes around and gets registered he will get $5.

Thomson says there is no maximum number of programs a user can get people to register.

Also, he notes, there is a second level Finders Award.

"If person B passes the program to person C, and C registers his program, B will get his $5 Finders Award. In addition, A will also get another $5 Finders Award for this second level."

At this time, he emphasizes, D.I.P. applies only to programs owned and copyrighted by Donald M. Thomson. Thomson markets GRAPHX, but asks that persons who have bought the program for him not distribute it.

He notes that there will be limited documentation on the disks that leave Thomson Software (D.I.P.) after July 1, 1985. The source code will no longer be put on the same disk as the object code. The documentation will include a D.I.P. registration form outlining the workings of the concept as well as a sublicense agreement form and some limited notes on how to use the program. Original manuals will be available from the company for $5 to cover copying and mailing.

Thomson will offer a sublicense policy of documented source code. The $30 license fee covers all documented source code currently held by Thomson. Persons submitting upgrades within the agreement guidelines will be eligible for author royalties based on copies registered with that person's upgrade in it.

For more information, the agreement will be included on disks leaving Thomson Software (D.I.P.) after July 1, or users may send a self-addressed stamped envelope to Thomson Software (D.I.P.), 3507 Murl, Muskegon, MI 49442.

Thomson says modifications submitted by someone who is not a licensed holder of the source code will not be considered until that person pays the $30 license fee.

He offers a 30-day money back warranty for persons who receive the disk directly from him. Persons wishing to receive the disks directly from him should send $20 for each program, plus $2 for shipping and handling of each.

"I cannot warrant programs that are passed from one person to another because I can't tell if the program has been modified or altered in some way," Thomson says.

## MORNING STAR—

(Continued from Page 30)

Mode 4—The 8K of ROM #0 is switched into the DSR space, >4000 to >5FFF, while simultaneously 8K of RAM is switched into the cartridge space >6000 to >7FFF. (This mode combines modes 1 and 3.) CRU bit 0 enables and disables the ROM, but leaves the RAM accessible. CRU bits 4..7 select one of 16 RAM banks to be made available to the DSR or other routine in the first on-board ROM.

Mode 5—All 16K of ROM is switched simultaneously into the combination of DSR and cartridge spaces, >4000 to >7FFF. Programs may then make use of the FMX mechanism in the console ROM to access subroutines in any part of this 16K.

Mode 6—Any one of the eight 16K RAM segments may be made to appear in the combination of DSR and cartridge spaces, >4000 to >7FFF, instead of ROM. As in all modes, CRU bit 0 enables and disables the RAM in the DSR space, but the upper 8K remain accessible at all times with this mode selection. CRU bits 5..7 select the bank.

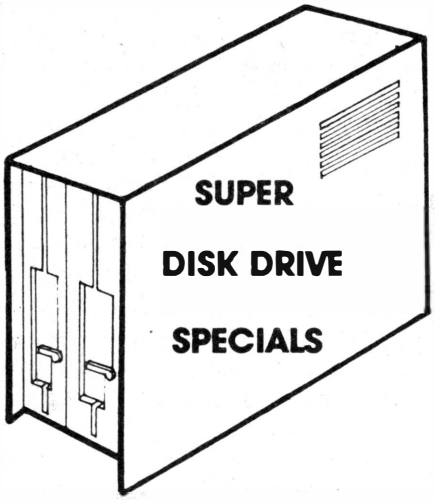
None of the last four modes may be used while a cartridge is inserted.

The board may be strapped to any of the standard CRU addresses for resolving conflicts in DSR assignments between third-party PEB modules. For systems without excessive power supply loading, two Morning Star 128K boards can be installed at separate CRU addresses for memory needs up to 288K, according to the manufacturer. The Morning Star 128K RAM Expansion Board design includes full card edge signal buffering.

PEB and 32K memory expansion (TI or Foundation 128K) are required. Loading programs requires either the Extended BASIC cartridge, Editor/Assembler cartridge, CorComp disk controller or on-board DSR EPROM (not provided). Assembly language programming (not provided) is required for use with Extended BASIC.

Price is $199 plus shipping. Mastercard, VISA and American Express are accepted.

For further information, contact Morning Star Software, 4325 SW 109th Avenue, Beaverton, OR 97005 or (503) 646-4695.

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Acorn 99

# A database that stands out

By JOHN KOLOEN

Some programs for the TI99/4A seem to carve out a unique place amidst vast quantities of similar programs. Witness Microsoft Multiplan, TI-Writer, Companion, CorComp's Disk Manager program and Miller Graphic's Advanced Diagnostics disk. There is no concensus concerning terminal emulators and graphics programs but now there may be a database program that stands out from the pack. That program is Acorn 99 by Oaktree Systems.

I do not come by this conclusion in a casual way. I have used a number of file manager programs, ranging from Database 500 to Navarone Industries' Data Base Manager. These and a number of others are quite good at what they do—acquiring and retrieving data. All of these work along the same lines, and all have basically the same limitations, namely, that the user can define only about two dozen fields and must limit himself to a total of no more than 255 characters per record.

Not Acorn 99. The user may design databases that include as many as 58 data entry fields with as many characters as one desires. Records may be called up based on any of up to 15 master fields—or "master record data items" as they are referred to by Oaktree Systems—and the user may create his own Extended BASIC programs to access database items directly for such purposes as customized printouts and forms.

**Performance:** Acorn 99 is not what I would call "user friendly" compared to most of the file manager programs I am familiar with. Acorn 99 introduces TI users to a different way of accessing data than they may be accustomed to and, essentially, a different way of thinking about data. The relationship between types of data is important to understand in the operation of Acorn 99 (though not necessary). It is quite feasible to use Acorn 99 as nothing more than an extremely versatile file manager without having to give much thought to relationships. That is exactly how I started to use the program.

## Review

**Report Card**

| | |
|---|---|
| **Performance** | **A** |
| **Ease of Use** | **A** |
| **Documentation** | **A** |
| **Value** | **A** |
| **Final Grade** | **A** |

**Cost: $69.95 (includes two disks)**

**Manufacturer: Oak Tree Systems, 3922 Valentine Rd., Whitmore Lake, MI 48189**

**Requirements: console, monitor or television, Extended BASIC, disk system, expansion memory, printer optional**

Acorn 99 comes on two single-sided disks. One contains utility programs used to define and create databases. The other disk contains systems programs designed to allow the user to update, search and produce reports from databases. The programs from these two disks may be combined on one double-sided disk for greater efficiency.

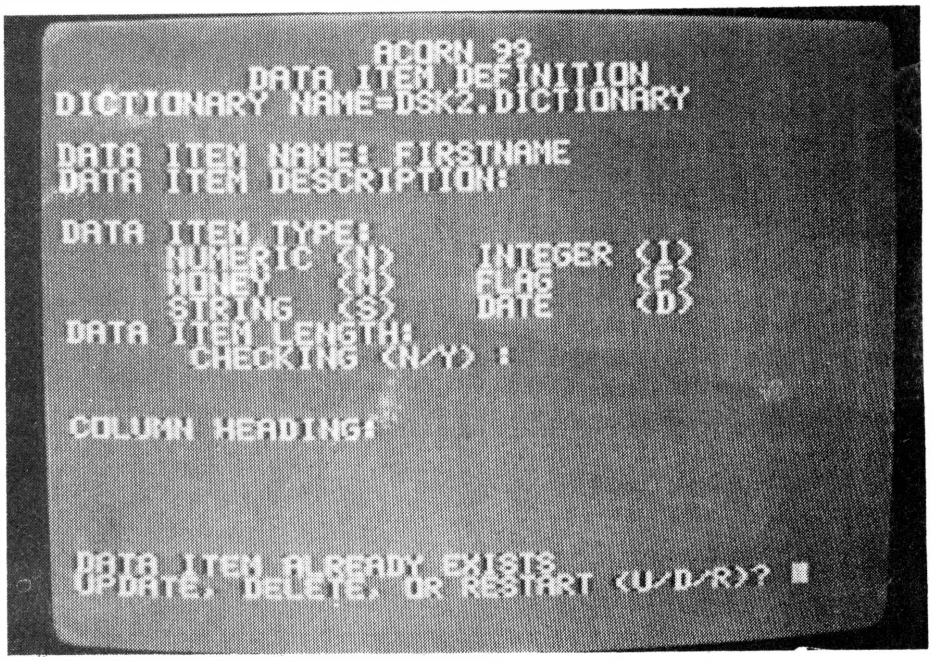
Although only one disk drive is required, Acorn 99 can use up to three drives. It can also operate out of a Winchester hard disk, though I was able to create databases only on floppies and then transfer them to a Winchester.

System configuration is the first step toward using Acorn 99. This program operates out of the utility disk and prompts the user for the number of disk drives in use, whether a printer is available, name of the dictionary file (more on that later), printer name (RS232 or PIO) and foreground and background colors. The user is also prompted for the character codes for "normal" pica font and compressed type font. (Acorn will set the printer to compressed mode automatically when printing a report tha is wider than 80 columns.)

These parameters are then saved to disk for future reference.

Next in line is the utility disk menu, which provides the following options: Define Data Items1

**(Please turn to Page 36)**



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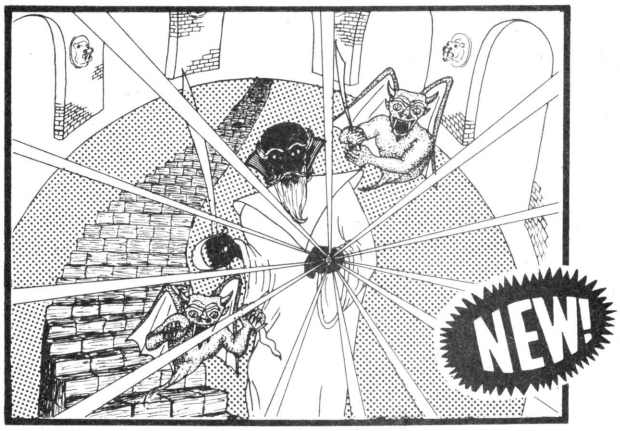
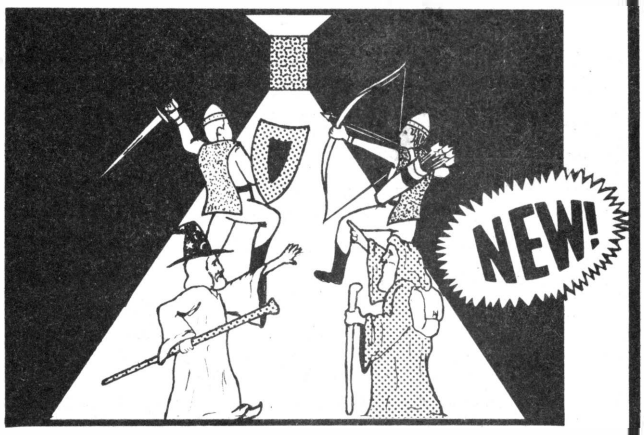



and the Fantasy Character Generator

## "DOOM CHARACTERS"

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# OAK TREE SYSTEMS ACORN 99—

(Continued from Page 34)

Define Databases2
Create Databases3
Copy Databases4
Process BASIC Programs5
Set System Configuration6
Reload Menu7

An aside here about the Display Enhancement Package which is provided in part with Acorn 99. These routines not only provide a 40-column display but also define the REDO, BACK, AID, PROCEED and BEGIN keys. Pressing AID (FCTN 7), for example, causes the program to return to the previous menu. Other keys are similarly (and conveniently) defined.

Running down the above menu, Define Data Items is the first thing the user will want to do. (Other programs refer to data items as "fields.") This is where the "dictionary" mentioned above becomes important. A feature of Acorn 99 is that the dictionary can contain up to 100 data items, or fields. (The user may create multiple dictionaries if need be.)

In defining a data item, the user assigns a name (up to 10 uppercase characters), the data type (numeric, integer, money, string, flag or date), item length (up to 240 characters each), item description (up to 38 characters used to describe the item), data item column heading (a phrase or word used to describe the data item used as the heading of reports) and data item edit checking (a range of values specified by the user to validate data).

Data Item Definition is the first step toward creating a database. Most file managers for the TI allow the user to create a limited number of data items, or fields, each of which must be used in the database. Acorn 99, however, allows the user to create a "dictionary" of up to 100 data item definitions which may be included in a database. This dictionary might better be described as a depository of data field definitions. Having defined and saved, say, four or five dozen data entry fields, the user then turns his attention to defining the database itself. (Suffice it to say that data item definitions may be edited or deleted from the dictionary at any time. The user may also print out the dictionary for easy reference.)

The most apparent difference between Acorn 99 and other database-type programs lies in its record structure. Acorn allows the user to create a database that includes up to five different but related records. These consist of three types: Root record, master record and detail records.

The root record, which the user may use at his option, occurs only once in a database, such as a checking account balance in a database having to do with checkbooks.

The master record consists of up to 14 data fields, plus a key field. All data manager programs for the TI that I am familiar with consist solely of master records. The key field is the primary search field used to locate particular records. Acorn 99 uses the first field as the key field. A database that consists of names, for example, would probably use the last name of persons as the key field. Key field entries do not have to be unique, thus increasing its flexibility in data retrieval.

If root and master records were all that were available, a user could create a database definition consisting of up to 15 fields, each of which may include up to 240 characters, depending on the data type. But Acorn 99 goes beyond this by offering three sets of detail records associated with the master record. Each detail record consists of up to 14 data entry fields, for a total of 42 fields. Taken with the master record and root record, up to 58 entry fields may be included in a single database. That is much more than twice the number of entry fields available on any other TI database or file manager program that I am aware of. Acorn 99 refers to this collection of master and detail records as a record group.

Detail records are retrieved after calling up a master record. Each of the detail records may be reviewed sequentially. Although the Acorn 99 manual goes to some length to describe how best to integrate detail records with master records in a logical fashion, they may be used in much the same way as fields in a master record. The essential difference between master and detail records is that only fields in a master record may be searched and sorted.

All of the definition and data entry functions of Acorn 99 are fully prompted. I am omitting specific mention of the various menus because of space limitations.

Having defined a database by determining which data entry fields will be placed where, the user saves the database definition under a given name and loads the database creation program. This program, which loads out of the utility disk, formats a disk file for data storage. The user is prompted for the number of master and detail records he wants to reserve space for. Having entered this information, the program calculates the number of master and detail records that will fit in a single sector. If the sector count exceeds 357 the program issues a warning, 357 being the number of sectors available for Acorn files on a single-sided disk. (The database creation program reserves several sectors for a control sector, root records and an index. The index is used to store the master record key field.)

Those with a double-sided or double-density disks may ignore this warning and calculate whether the sector count exceeds the capacity of double-sided and double-density disks. The program then asks whether entries into the key field may be duplicated or whether the key entry must be unique. (Being able to duplicate the key field is extremely useful for databases that use names, ZIP codes or similar data as the primary search or key field. One may enter the names of numerous Smiths and Joneses and be able to search records for all of them.) The user is also prompted as to whether to keep records in the entry sequence. Finally,

(Please turn to Page 38)

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# 99/4A NATIONAL ASSISTANCE GROUP

National Headquarters, Box 290812, Fort Lauderdale, FL 33329, Attn: Membership Division

# OAK TREE SYSTEMS ACORN 99—

(Continued from Page 36)

the user is prompted to give a name to the database. From there the program takes over and reserves the space for the database. Acorn 99 files may reside on the same disk as the Acorn program or on any other disk.

Now that we've defined and created a database, we switch to the Acorn 99 system disk. This disk includes programs to enter data, query databases and create report formats. The system disk is also used to set system defaults for the number of disk drives to be used, printer name and codes for normal and compressed type fonts.

The update program includes segments for adding record groups, updating and deleting existing record groups. The user is prompted for each entry when adding a record and then asked whether corrections need to be made before the data is added to the database. To update a record, the user is prompted for the key record. The record is then read to the screen where it may be changed and resaved. Deleting a record requires entering the key field. The master record is then displayed on the screen and the user must verify that the deletion is to be made before the command is executed. The master and all detail records associated with it are deleted upon execution.

Acorn 99 offers a query program that can be very useful, particularly as the database increases in size. Through the query program, the user has the option of displaying selected records, creating a subset file, selecting a subset file or cancelling a subset file.

A basic function of the query program is to search the database for records based on user-defined criteria. As with many data management programs, the search is based on the use of logical operators: equal to, unequal to, greater than or less than. In querying Acorn 99 the user is presented with a master record template for the database on which the query is to be made. The cursor appears sequentially at each data field. Each field at this point contains a period, which is the symbol used to tell the program not to bother with using the field as a search criteria. Entering an equal sign over the period tells the program the field is to be searched for a particular item. The user then enters the specific item he is searching for and moves to the next field.

ACORN 99

LISTING OF DICTIONARY "DSK2.DICTIONARY"

| DATA ITEM | TY | LEN | DESCRIPTION | L. LIM/VALS. | UPPER LIM. |
|---|---|---|---|---|---|
| FIRSTNAME | S | 10 | First Name | | |
| LASTNAME | S | 15 | Last Name | | |
| ADDRESS | S | 24 | ADDRESS | | |
| CITY | S | 13 | City | | |
| STATE | S | 2 | STATE | TX | TX |
| ZIP | N | 5 | ZIP Code | 70000 | 79999 |
| ORGANIZATN | S | 40 | ORGANIZATION | | |
| WORKPHONE | S | 8 | Work Phone | | |
| HOMEPHONE | S | 8 | Home Phone | | |
| MEETINGS | S | 12 | Meeting Date | | |
| TYPE | S | 15 | Type of Organization | | |
| REQUIRE | S | 25 | Prerequisites | | |
| LOCATION | S | 25 | Place of Business | | |
| PURPOSE | S | 50 | Purpose | | |
| ORGNAME | S | 20 | Org. Name | | |
| HOURS | S | 15 | Business Hours | | |
| AREA | S | 20 | Area of Coverage | | |
| FEES | S | 10 | Fees/Dues | | |
| AFFILIATE | S | 25 | Affiliation | | |
| MEET | S | 25 | Meeting Place | | |

In addition to the equal sign, other symbols include the slash sign, used to search for items not equal to the selection criteria; the greater than symbol and less than symbol for searches based on numeric data items. When this selection of criteria is finished, the program searches the database for the relevant records. If none is found, a message appears to tell you. If a record is found, the data from the master record is displayed and the user has a choice of ending the search, going on to the next data item that fits the criteria, accessing detail records that are associated with the master record or outputting the data to a printer.

Users may search a database on the basis of any master record field. It is not necessary to use the key entry field.

Searches based on other than the key field take 1-2 seconds per record to execute. To help speed things up, Acorn 99 has a provision for creating subsets, which are files that contain a list of the locations of records which satisfy given search criteria. Subsets are efficient when used as the basis for sorting data in ascending or descending order. A subsort can be used to sort the entire database or portions of it. Although sorts may be conducted on multiple items, the use of numeric data as sort criteria is not recommended.

The report function of Acorn 99 is probably the least developed segment of the entire program. The report generator allows the user to decide whether to use data item headings, the number of lines per page and a choice of two report formats. One format prints column heads only at the top of each page for all items while the second format option prints the headings at the start of each record that is printed. There is no utility to customize reports built into the program, but users may create their own Extended BASIC programs to do this. The manual includes an example of a customized report generator that may be used as a template to create report formats. This does require a working knowledge of BASIC programming.

Acorn 99 also provides a database copy format utility that allows the user to merge data from two or more databases, copy a subset of records into a separate database, provide a

(Please turn to Page 45)

## Advanced Diagnostics

# The cutting edge in disk utilities

**By CHRIS BOBBITT**

The staggering growth in disk utility software over the last two years is one of the greatest success stories of the 99/4A community.

When the 4A was "alive" (as if this is "death"), there were practically no disk tools for the serious user. After October 1983, this software field seemed to bloom overnight, as a barren desert does after a rainstorm.

The results of this software renaissance are evident. Now available are numerous disk copying programs such as Floppy Copy, Copy Cat and Nibbler; disk cataloging programs such as MDI, Master Disk File and Super Cataloger, a new disk manager from CorComp; and even a few new disk sector editors such as Disk Fixer, Disk Surgeon 99 and the public domain DISKO. However, until recently, the 99/4A community was only playing catch-up to the rest of the computer industry. Such tools are readily available for even the lowly Vic-20, although the level of sophistication found in the 4A programs is a quantum leap above the rest. It wasn't until Miller's Graphics wrote Advanced Diagnostics that the 99/4A led the way into the second generation of disk utilities.

Advanced Diagnostics is almost a logical step above the first generation disk utility. It combines the features of a disk copier and disk manager, along with those of a very sophisticated disk editor. Advanced Diagnostics represents the cutting edge in disk utility technology, and provides tools only dreamed of by most of the computer industry. By itself it's an excellent reason for owning a 99/4A.

**Performance:** Advanced Diagnostics features more than 20 minor functions and numerous minor ones. It performs a lot of tasks found on disk copiers, editors and managers, and a number unique to this program.

As a disk editor, this program is undoubtably the most comprehensive

## Review

**Report Card**

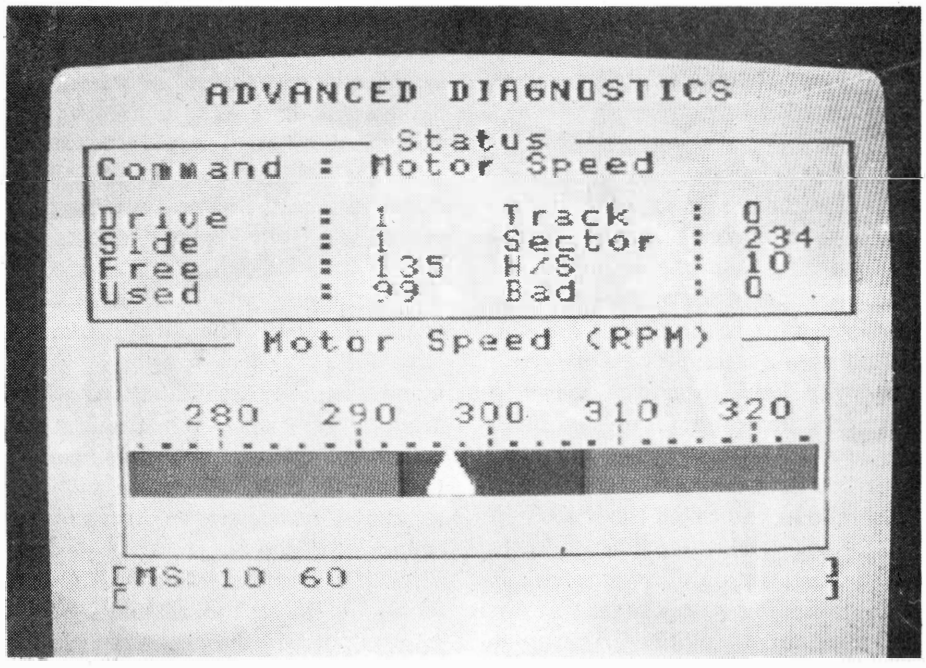
**Performance ..... A**
**Ease of Use ..... B+**
**Documentation ..... A**
**Value ..... A+**
**Final Grade ..... A**

**Cost: $19.95**
**Manufacturer: Miller's Graphics, 1475 W. Cypress Ave., San Dimas, CA 91773**
**Requirements: console, monitor or TV, disk drive and controller, 32K memory expansion, and either XB, Editor/Assembler or Mini-Memory. Printer optional.**

available. As with the DISKO program and others, single sectors (256 byte segments of the disk) may be read or written to or from a disk. With this function, and some basic knowledge of how data is stored on the disk (all explained in depth in the manual), the user can repair damaged files or disks quickly and relatively easily. Single bytes of data within a sector may be changed, and the new sector rewritten to the disk. Advanced Diagnostics provides a full screen editor with auto-repeating cursor keys for this purpose, and useful keys for moving to the sector before or after the one being edited, displaying all the data as ASCII characters (the regular character set) or as hexadecimal values, erasing all the data in a sector, deleting or inserting individual bytes in a sector, and dumping to a printer any screen. Like DISKO, the program will also search to see if and where a file exists on a disk.

As a disk editor, Advanced Diagnostics (hereafter AD) doesn't just stop there, even though the best of the rest do. AD allows you to read or write whole tracks, which consist of 9 or 18 sectors each depending upon whether the disk has been formatted single-density or double-density. This allows you to explore the information the disk drive stores BETWEEN sectors—vital stuff for the programmers who want to create new copy protection schemes, or try to squeeze more out of their disk

**(Please turn to Page 40)**



# ADVANCED DIAGNOSTICS—

(Continued from Page 39)

drive. Additionally, the program allows you to confine all your operations to a single disk drive.

As a disk manager AD is pretty fair. As far as I can tell, however, it wasn't designed to function as a disk manager at all. It incorporates disk manager functions only in order to make the program more comprehensive and easier to use! Using the disk editor, you can duplicate most of the functions of a disk manager. Files can be copied sector by sector, be renamed or be deleted. However, unless you are in a hurry and don't want to load another program, other programs do this much easier. The program does incorporate a number of built-in functions that operate as easily as a disk manager does.

If you need a blank disk, for instance, AD will let you initialize and check a disk in any format from single-sided, single-density to double-sided, double-density with a single command. Also available are functions for checking a disk for bad sectors and generating a catalog of the files on the disk. Using the Command Files function you can load mini-programs to copy disks, reformat them, or perform any number of specific tasks. More on this function later, though. All in all, AD will do almost anything the Disk Manager II cartridge will do, usually faster, but in some cases perhaps not as easily.

AD has a number of commands never seen before in any disk utility. One of the most unusual commands is the one that lets the user set the head/step time of the disk drives. The head/step time is the time it takes in millionths of a second for a disk drive's read/write head to move along the disk. The longer the head/step time, the slower the disk drive operates. With the CorComp Disk Controller, which allows you to set the head/step time of each disk drive independently of the others with a dip switch, this is useful in finding the optimum time for each disk drive. With all disk controllers, this allows you to speed up some operations to the limit of the drives.

A number of functions that are purely diagnostic in nature are also included. A particularly interesting one tests each byte of RAM in the computer to see if it's perfectly functional. This check entails up to 963,072 separate memory tests, yet takes only a minute at most! It may be useful to know whether a newly purchased console works as it should. Another function tests the motor speed of disk drives. The program provides a nice graphic display of the tested rotations per minute of the specified drive. If the graph's pointer consistently jumps out of the safe zone, the disk drive may need repair. This is also very useful for testing new or old disk drives, if the test is accurate at all (not to cast aspersions). No matter how interesting these routines may be, they are only useful if the user understands what he or she is testing.

AD has a number of commands that allow you to customize the program to your own system and preferences. By altering a Command File called DIACONFIG, you can set screen colors to your taste, select a single disk drive for operations, specify the output device name and even display a friendly welcome message on the screen.

Any and all of AD's commands can be placed in Command Files which, with the exception of DIACONFIG which is executed at program startup, can be selectively loaded and executed at any time. Command files are, in fact, mini-programs, and AD is, in fact, a complete programming language as well as a utility. Command Files can be written with TI-Writer or any other compatible word processor. They have a definite syntax, and can contain special commands to display text, cause the program to beep, pause for a key press or pause for a specific duration. They can incorporate ANY of the advanced commands found in the program. Codes representing certain key presses can also be included in Command Files. The ability to program a program is common on many second generation products; DBASE II, the second-generation database program for the IBM computers, is a well-known example.

You don't have to learn how to write programs for AD to utilize it fully. As a matter of fact, a number of Command Files (read programs) that perform several very useful and semi-obvious tasks are packaged with AD. BOXFORMAT, for instance, allows you to initialize and check a whole box of disks, and assign them successive names, in about the same time it takes a disk manager program to do five or so.

The list of packaged Command Files include the disk tests R+WTEST, READTEST and SEEKTEST, the last of which is useful in determining the optimum head/step time for your disk drives. Also included are DSKCOPY1-2, which initializes the disk in drive two and copies the contents of the disk in drive one onto the new disk as fast as any of the disk copying programs; INSTALLMGR, which allows you to place the CorComp Disk Manager on the program disk if you have the CorComp Disk Controller; and DISKHEADER, which makes a disk look freshly initialized to the computer. The fact that you can write your own useful routines just makes AD even more exciting.

The program executes flawlessly, loads relatively quickly and is so useful that it is one of my nominees for all-time best TI99/4A program.

**Ease of Use:** The program, while exceptionally powerful, is not as easy to use as some. The commands have to be TYPED in, not selected at some menu. While this facilitates those wonderful Command Files, and is demonstrably more flexible, it does make the program somewhat harder to use for non-typists or those people who can't readily memorize 30 or so com-

(Please turn to Page 45)

# Freeware (or nearly so)

## Freeware policies

**This page is a regular feature of MICROpendium. MICROpendium makes no claims as to the validity of any Freeware offer nor is there any guarantee that any software will be suitable for any purpose.**

**Freeware requirements:**
**—disks sent for freeware should be initialized;**
**—unless otherwise stated, you must include a stamped, self-addressed return mailer to receive the freeware;**
**—be patient (those offering Freeware are not doing it for a profit);**
**—report any problems you have to MICROpendium.**

## Software updates

MICROpendium is offering file updates for TI-Writer and Microsoft Multiplan. Also offered at no charge is Super Bugger and an Extended BASIC loader for TI-Forth.

The TI-Writer enhancements offer new printer defaults and true lowercase letters. Multiplan enhancements include an auto-repeating cursor that speeds up program operation. The Forth loader allows TI-Forth to be used with Extended BASIC rather than the Editor/Assembler. Super Bugger is an improved version of TI-Debugger

TI-Writer and Multiplan updates all fit on a single-sided disk. Super Bugger will fit on a single-sided disk. All three will fit on a double-sided diskette. The Forth loader requires a single-sided diskette. Order the Forth loader separately from the updates and SBUG. Send the appropriate number of diskettes to Freeware, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

TI-Farth is also available. The cost is $20 and includes the 232-page manual, the system disk with screens, a demo disk, postage and packaging. Purchasers are asked to include two initialized single-sided diskettes. MICROpendium will supply a third disk containing the source code for TI-Forth at no extra charge.

To order, send check or money order and two diskettes to Forth, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

## Free access library

Amnion Helpline is offering TI users its Free Access Library of public domain software. The library consists of 104 diskettes filled with programs for the TI99/4A.

The library is operated as a non-profit entity by Dr. Guy-Stefan Romano, director of Amnion Helpline. The helpline is a free information service for TI users who have questions about products and other aspects of home computing.

The library provides "volumes" of programs. There are 37 diskettes, or volumes, of games; 10 diskettes of graphics-oriented programs; 16 music-oriented diskettes; 14 diskettes of learning materials in many categories; eight diskettes of financial and business programs; seven diskettes of technical, scientific and statistical programs; six diskettes of personal and home use programs; and 6.5 diskettes with miscellaneous programs ranging from baseball statistics to programming utilities. There are also a limited number of Pascal and Forth programs available.

Volumes are $5 each. The cost includes the single-sided diskette, mailer and postage. Users may send their own diskettes and return postage and mailer and obtain volumes for $2.50 each. Romano asks that users send no money until writing for information, as there are programs for which no copying fee is charged.

Volumes on double-sided diskettes are $8, $4 if the purchaser sends a diskette, mailer and postage.

All programs may be copied and redistributed freely as long as no charge is made for them.

The library also will supply particular programs to fit specific purposes to any user who sends an initialized diskette with return mailer and postage. Enclose a note describing the type of program desired. Amnion will return the diskette with programs that fit the description.

Users are encouraged to donate programs to the library. There is no payment. Include a note stating that the program submitted is to be placed in the public domain.

Order forms for software volumes are available from the library. For more information, contact Amnion Helpline at (415) 753-5581 from 9 a.m. to 4 p.m. (Pacific time) or write to 116 Carl St., San Francisco, CA 94117.

## Free utilities

Danny Michael, of Route 9, Box 460, Florence, AL 35620, has a freeware screen dump and a program called Neatlist.

The screen dump is written in assembly language and is unprotected. It requires XBASIC and works with Epson/Gemini-type printers. The program includes instructions and fully commented source code.

Neatlist is an assembly language utility for XBASIC programmers. Neatlist produces an orderly listing of programs that can be a time-saver in debugging and modifying programs. The program allows the user to set margins for program listings as well as starting and ending line numbers. Listings include easy to read program lines and a list of variables used in the main and subprograms. If you like it, he says, you may pay him for the program, but not more than $10. If you don't like it, "you keep it anyway," he says. He asks that you give copies of the program to others. Send one disk for each program. Or send $5 for each program and he will supply the disk, mailer and postage.

## Free craps game

Ramsoft Enterprises, 1501 E. Chapman Ave., Suite 338, Fullerton, CA 92631, is offering its Computer Craps game as Freeware. The game formerly sold for $14.95. The game requires XBASIC and expansion memory. Instructions are included as a file that can be read by TI-Writer.

## On cassette

Robert D. Temple, 602 E. Franklin St., Kenton, OH 43326-2015, is offering several small programs in console BASIC. The programs are used in state lottery games to pick either 3, 4 or 6 numbers completely at random using the RANDOMIZE and RND command. Another program picks every possible combination of numbers in Lotto-type games. Send a cassette for the programs.

## Free routines

Silver Wolf Software, P.O. Box 4242, Santa Rosa, CA 95402, is offering a collection of assembly language routines written for the NORCAL TI99/4A User Group. The utilities include a routine to save and recall an entire screen of text, a routine that creates lowercase letters with true descenders and a complete chart of ASCII characters, alongside their code values. The routines require XBASIC, disk system and memory expansion. Send a disk with return mailer and postage.

## Sprite Builder

John Taylor, 2170 Estaline Dr., Florence, AL 35630, is offering Sprite Builder as freeware to TI users. The program is used to design double-sized sprites. An Extended BASIC-assembly language hybrid, the program requires a disk drive, expansion memory and Extended BASIC. A speech synthesizer and printer are optional.

Those who order must send either two single-sided or one double-sided disk. Included are a cassette version and disk version of Sprite Builder, disk and cassette documentation that may be called to the screen or dumped to a printer, fully commented assembly language source code and 115 predefined sprite patterns that the user may modify or merge with existing programs. Sprite Builder has 22 active functions which are accessed with a single key press.

Those who wish to obtain the programs without sending disks and prepaid return mailers may do so by sending $5 for a double-sided version or $7.50 for two single-sided disks.

## Texnet freeware

Texnet, the Texas Instruments electronic network operating on The Source, offers some 250 downloadable programs at no charge to Source subscribers. For more information, write Texnet at Soft Mail Inc , P.O. Box 745, Rockwall, TX 75087.

## Weather forecaster

Gary Cox offers two programs. The first is called "Weather Forecaster," and Cox says it will forecast the weather for any place in the U.S. "with what I think of as a fair degree of accuracy." The second is a game called "Lawnmower" in which the user tries to mow the yard while his irritable neighbor tries to kill him and a dog tries to bite him. "Weather Forecaster" requires Extended BASIC, 32K and a disk system. "Lawnmower" requires Extended BASIC; speech synthesizer is optional. Cox says he asks $5 for the two programs "if the users think they are worth it. However, regardless of whether or not I receive any money I encourage people to copy and distribute my programs."

Those interested may send an initialized disk, mailer and return postage to Gary Cox, 3174 Melbourne, Memphis, TN 31827.

## TRIVIA 99er

A game program, TRIVIA 99er, is being offered as Freeware. The game runs in XBASIC and can be played by 1-4 players or teams, and was written by Robert L. Wessler.

Wessler writes: "Extra disk labels are available for the asking, and user groups may request several dozen for their members. A self-addressed stamped envelope should accompany the request for labels."

To receive the program, send an initialized disk, packaging and return postage, or $5 for the disk, disk mailer and postage, to Robert L. Wesler, 4300 Frazier, Fort Worth, TX 76115.

## Two music disks

Bill Knecht of the Houston Users Group is offering two disks of music programs. All songs include graphics, some animated.

The first disk includes a musical load program and a collection of popular and folk tunes, including the U.S. and Canadian national anthems.

The second disk includes a unique load program and a collection of hymns, including a Christmas medley.

The programs are written in XBASIC and require memory expansion and two disks. For a copy of these, you may send two SSSD disks and a prepaid mailer, OR a check for $6 for both, to Bill Knecht, 815 Yorkshire, Pasadena, TX 77503.

## Two programs

Two disks of public domain software are available from David R. Romer, 213 Earl St., Walbridge, OH 43465. Send $6 per disk to cover costs of the disk, postage and handling.

Homebrew Module Software includes four stand-alone programs as well as a loader system to provide title screen menu access to "Load and Run" E/A programs. The programs—Single

**(Please turn to Page 47)**

**Anyone wishing to have a Freeware announcement included on this page may do so by submitting a copy and brief description of the program, and a note indicating that it is in the public domain, to MICROpendium. The notice will appear monthly, subject to approval by the publisher. Freeware announcements will continue to be published until withdrawn by the person submitting it.**

# Newsbytes

## User testing slated

Navarone Industries has announced a program that will give qualified TI user groups "a first hand opportunity to see, touch and feel new products for the 4A before they're released."

User groups will be able to evaluate the products and suggest features and new products that they would like.

Navarone has recently reached an agreement with DataBioTics to manufacture and publish new software products for the 4A. William Hadley, Navarone's director of marketing, says the two firms expect to release at least eight new products jointly over the next year.

Hadley said that Navarone also has a new program to encourage new product developers to publish their programs.

For further information, contact Navarone, 19968 El Ray Lane, Sonora, CA 95370 or (209) 533-8349.

## Games now on disk

Not-Polyoptics has announced that its two most popular software game programs, Winging it, a flight simulator for the TI99/4A, and Khe Sanh, simulation of the famous battlefield of Vietnam, are now being produced on a disk format compatible with the TI99/4 and 4A, in addition to their format on cassette tape.

Gene Harter, general partner of Not-Polyoptics, has announced a new software product, NORAD, the military version of the company's air traffic controller simulation, Tower.

Prices of the new products are Winging It disk, $16.50; Khe Sanh disk, $19.50; and NORAD cassette, $18, disk $19.50.

These products or a free catalog are available from Not-Polyoptics, P.O. Box 4039, Woodbridge, VA 22191.

## TI, IBM PC can talk

Intelpro announces Upwards!, a package that allows communication via a short cable between a TI and an IBM PC, to be released Sept. 1.

Both computers are operated from the IBM keyboard, according to Allen Swett of Intelpro.

The program "is to transmit data files between the two computers, which Upwards! accomplishes at 8,000 bytes per minute in either direction."

Swett emphasizes that the name, "Upwards!" refers to the function of uploading, and is not meant to suggest that "moving from one computer to another elevates a person's social status."

To operate the program, an IBM-PC with a single RS232 cord and an appropriate cable and a fully configured TI system are required.

He estimates that the price will be less than $80.

The TI end of Upwards! is written in Forth and the IBM end in Turbo Pascal.

For further information, contact Intelpro, 5825 Baillargion St., Brossard, Quebec, Canada J4Z 1T1, or (514) 656-8798.

Swett also noted that the Companion word processing program from Intelpro is now available in a French language as well as an English version.

## Schedule Manager

Asgard Software has released Schedule Manager, a program which integrates the functions of "a large appointment book, a useful calendar and a handy notebook," according to manufacturers.

They further state that data from one function can be passed to the others with a single command, and that the program features complete pull-down menus and interactive windows "straight from a certain well-known Apple computer."

Prompts are in English, and the manufacturers say the program features a powerful and extensive Help utility. The program has more than 16 different menu options, a full-screen editor, complete print options and assembly language speed. The manufacturers say Schedule Manager can be used for keeping a weekly, monthly or quarterly schedule; keeping lists (such as of names and phone numbers; or maintaining a log of expenses.

The program requires Extended BASIC, a 32K memory expansion unit and a single disk drive. A printer is optional.

Suggested price is $29.95. The unprotected program can be obtained from dealers or from Asgard Software, P.O. Box 10306, Rockville, MD 20850.

## Stock analyst

Arcade Action Software, 4122 N. Glenway, Wauwatosa, WI 53222, is marketing a package called Wall Street Analyst for the 99/4A. The program is available on diskette or cassette. Both run out of console BASIC. The price is $40. Documentation consists of a 45-sector BASIC program that may be read on the screen or output to a printer.

Wall Street Analyst consists of 22 programs and files totaling 339 sectors. Included are functions for trend analysis, portfolio management, security analysis balance sheet, security analysis statistics and market evaluation. All calculations are done by the program, based on input from stock exchanges and financial publications.

**Newsbytes is a column of general information for TI99/4A users. It includes product announcements and other items of interest. The publisher does not necessarily endorse products listed in this column. Vendors and others are encouraged to submit items for consideration. Items submitted will be verified by the staff before inclusion and edited to fit the Newsbytes format. Mail items to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.**

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# User Notes

## Quick sort routine

The following assembly language routine was written by David R. Romer and John Clulow. It was supplied to MICROpendium by Ed York of the Cin-Day (Ohio) Users Group.

```
100 CALL CLEAR :: CALL INIT
:: CALL SCREEN(5):: FOR A=0
TO 14 :: CALL COLOR(A,16,5):
: NEXT A :: DISPLAY AT(12,1)
:"SORT ROUTINE IS BEING LOAD
ED" :: CALL LOAD("DSK1.SORT"
)
110 DISPLAY AT(2,1)ERASE ALL
:"FIRST NAME:": : : :"LAST N
AME:" :: FOR B=1 TO 10 :: AC
CEPT AT(4,1)SIZE(-28):A$(B):
: ACCEPT AT(8,1)SIZE(-28):B$
(B):: C$(B)=B$(B)&" "&A$(B):
: NEXT B :: CALL LINK("SORT"
,C$(),10)
120 D=2 :: FOR E=1 TO 10 ::
F=POS(C$(E)," ",1):: A$(E)=S
EG$(C$(E),1,F-1):: B$(E)=SEG
$(C$(E),F+1,LEN(C$(E))-F)::
DISPLAY AT(D,1):B$(E);" ";A$
(E):: D=D+2 :: NEXT E
130 DISPLAY AT(24,1):"PRESS
ENTER TO DO DEMO AGAIN" :: C
ALL KEY(0,G,H):: IF G<>13 TH
EN 130 ELSE 110
```

This utility does a full ASCII sort on any string array. Use E/A or TI-Writer to enter the routine and save it under the filename SORT. Make sure you use OPTION BASE 1 before using. To load, first enter CALL INIT to prepare the expansion memory. Then enter CALL LOAD("DSK1.SORT"). In order to link the utility with data stored in an array, use: CALL LINK("SORT",A$(),A), where A$() is the name of the array and 'A' is the number of items to be sorted or the highest array element used.

This utility requires Extended BASIC, expansion memory and a disk system.

Also below is a brief program that demonstrates how Quick Sort works. Enter the program and run it, making sure that the Quick Sort routine is in DSK1.

## Unlimited buffer

Gary Cox of Memphis, Tennessee, writes:

Those TI users that are using the TE2 cartridge for telephone communications with bulletin boards or pay services have probably noticed that the TE2 has a small text buffer which retains about four screens full of data and any over that is scrolled off. Using the following procedures you can obtain an almost unlimited text buffer for a cost of almost free! (This will work only with acoustic modems.)

First go to Radio Shack and buy a Telephone Pickup cord used to record telephone conversations (Cat44-533). It only costs about $1.99. You will notice on one end a suction cup which has a microphone in it. The other end has a jack to plug into the microphone jack of a tape recorder. Place the suction cup on the listening piece of your telephone and plug the other end into your recorder's microphone jack. Then press record and call the modem service and perform all operations as normal. When you are through and log off rewind the tape. Now with your TE2 and system set up as if you were going to call, put your modem on originate and press play on the recorder. Place the speaker of the recorder near the listening piece of the modem and adjust the volume only loud enough for the ready light (carrier detect light) to come on. Everything that you did while connected will be displayed just exactly as it happened. You may press fast forward on the recorder if you wish to advance ahead.

One word of caution, keep the suction cup microphone away from transformers, televisions, or any electrical device, as they will cause a humming noise interfering with the recording. Of course you will have to have the microphone close to the modem but only a slight humming noise will be detected and your modem should filter out the noise when you play the tape back. As an alternative to using the internal speaker in the recorder, you could purchase a pillow speaker from Radio Shack which you can place on top of the cup on the modem which will give a better signal and you do not have to listen to the noise from the speaker.

(Please turn to Page 44)

```
00CA0       A0000A07D0A08D0A09D0A0AD0A0AF0B0000B0001BFF00BC80B7F2ADF     0001
A0AF8C0AF0B02E0C0AD0B04C0B0201B0002B0420B200CB0200B4041B90207F2D1F     0002
A0B0EB834AB1316B06C0B9020B834AB1304B0200B1300B0420B2034B02027F2FBF     0003
A0B24B0064B04C3B04C4BD0E0B834BB06C3B38C2B04C3BD0E0B834CB06C37F254F     0004
A0B3ABA103B1004B04C4BD120B834BB06C4B04CAB04C98C820C0AF2C00027F270F     0005
A0B50BC804C0004B058AB028AB0000B1602B0460C0C58B060ABC24AB0A197F2AEF     0006
A0B66BC049B0A11BC321C0002BC361C0004BC00CB0201B0001B0202C07D07F2D9F     0007
A0B7CBD820C0AF4C07D0B0420B2014BC3CCBC38DB058EB060EB83CEB133A7F21DF     0008
A0B92BC00EB0201B0001B0202C08D0BD820C0AF4C08D0B0420B2014B02017F2D1F     0009
A0BA8C07D0B0202C08D0B06A0C0C68B0280B0001B1301B10E9BC00FB02017F2B6F     0010
A0BBEB0001B0202C08D0B0420B2010B058FB83CEB131CBC00FB0201B00017F2B3F     0011
A0BD4B0202C09D0BD820C0AF4C09D080420B2014B0201C07D0B0202C09D07F2B0F     0012
A0BEAB06A0C0C68B0280B0002B1301B10E9BC00EB0201B00018202C09D07F2C3F     0013
A0C00B0420B2010B10C3BC00FB0201B0001B0202C07D0B0420B2010BC04D7F2FEF     0014
A0C16B604FB0281B0002B110BBC24AB0A19BC04FB0581BC089B0A12BC8817F27BF     0015
A0C2CC0002BC88DC0004B058ABC04EB604CB0281B0002B110BBC24AB0A197F27EF     0016
A0C42BC089B0A12BC88CC0002BC04EB0601BC881C0004B058AB0460C0B567F286F     0017
A0C58B04C0BC800B837CB02E0B83E0BC2E0C0AF0B045BB04C3BD0D1BC0027F23FF     0018
A0C6EB9452B1401BD0D2B06C3B0581B0582B9452B1A0BB1B0DB0603B15F97F27AF     0019
A0C84BC080B9812C07D0B1A04B1B06B0200B0003B045BB0200B0001B045B7F2DBF     0020
A0C9AB0200B0002B045B7FB76F                                             0021
50AF6SORT  7FD1FF                                                      0022
:       99/4 AS                                                        0023
```

# User Notes

(Continued from Page 43)

## Decimal to binary

Jose E. Palmieri, of North Miami Beach, Florida, writes:

"Upon studying Prof. Vladimir Swass' Introduction to Computer Science' (Barnes & Noble Outline Series) it came to my mind an idea for designing a program for the TI99/4A for conversion of decimal integers to the binary system.

As you will see, the program allows a choice for either having the results displayed on the screen or having them on the screen and on a printout at the same time."

The program runs out of Extended BASIC and is designed for use with a Gemini printer. However, it should operate as is with most dot-matrix printers.

```
100 REM * CONVERSION OF INTE
GER DECIMAL NUMBERS TO BINAR
Y *
110 REM (VERSION: SCREEN OR
SCREEN & PRINTOUT)
120 REM BY J.E. PALMIERI
130 REM TI EXTENDED BASIC
140 CALL CLEAR
150 DIM B$(100)
160 PRINT TAB(2);"----------
---------------"
170 PRINT
180 PRINT TAB(8);"CONVERSION
 OF"
190 PRINT TAB(3);"INTEGER DE
CIMAL NUMBERS"
200 PRINT TAB(6);"TO BINARY
NUMBERS"
210 PRINT
220 PRINT TAB(2);"----------
---------------"
230 PRINT :: PRINT
240 PRINT TAB(2);"ENTER ""0""
 TO LEAVE PROGRAM"
250 PRINT :: PRINT
260 PRINT :: PRINT
270 PRINT "YOUR CHOICE:
             SCREEN ONLY
  - 1        SCREEN & PRINTE
R - 2"
280 INPUT C
290 ON C GOTO 350,310
300 PRINT
310 CALL CLEAR
320 OPEN #1:"PIO"
330 PRINT #1:"DECIMAL";TAB(1
6);"BINARY"
340 PRINT #1
350 CALL CLEAR
360 PRINT "DECIMAL";TAB(16);
"BINARY"
370 S=1
380 DISPLAY AT(1,1):"DECIMAL
 NUMBER: "
390 ACCEPT AT(1,17)BEEP:D
400 D$=STR$(D)
410 IF D=0 THEN 690
420 PRINT TAB(5)-LEN(D$);D;
430 IF C=1 THEN GOSUB 530 EL
SE 470
440 PRINT TAB(22)-LEN(X$);X$
450 X$=""
460 GOTO 370
470 PRINT #1:TAB(5)-LEN(D$);
D;
480 GOSUB 530
490 PRINT #1:TAB(22)-LEN(X$)
;X$
500 PRINT TAB(22)-LEN(X$);X$
510 X$=""
520 GOTO 370
530 Q=D/2
540 IF Q=.5 THEN 640
550 R=(Q-INT(Q))*2
560 IF R=0 THEN 570 ELSE 590
570 B$(S)="0"
580 GOTO 600
590 B$(S)="1"
600 Q=INT(Q)
610 Q=Q/2
620 S=S+1
630 GOTO 540
640 B$(S)="1"
650 FOR L=S TO 1 STEP -1
660 X$=X$&B$(L)
670 NEXT L
680 RETURN
690 END
```

## More on heat sinks

Our March issue carried a hardware fix to replace the black heat sinks in the black and silver console's power board and a letter to the editor in May took issue with the advisability of it. Now, here are further comments from the newsletter of the Upstate 99/4A Users Group in Albany, New York:

"I had purchased several of the boards just because they were TI parts without knowing just what I was going to do with them. After reading the first article (before the letter was printed) I decided to try changing mine. It wasn't as easy in my older black console. The plug for the new board is right on the board. Mine was in the middle of the wire between the power supply board and the main computer board. This made it necessary to unsolder the plug from the new board and replace it with the wires from the old board. Before connecting the new power supply to the computer it is very important to test it for proper voltages. I found one (out of four) that would have blown my main board sky high. Twenty-five volts instead of five. Smoke!!! There is a place for the LED resistor and the LED itself. If you choose to use your old LED a 470 ohm to check resistor will give you almost the exact same brightness.... The reason the new supply runs cooler is because of a different circuit design, not the shape or color of the heat sink. But, remember if you choose to try this, it's at your own risk."

## From Radio Shack

For CC-40 owners, Dan H. Eicher of Beech Grove, Indiana, notes that Radio Shack sells calculator stands. The stands work perfectly with the CC-40 to make viewing much easier, he says, noting that you will need two of them.

We have also been told that Radio Shack sells batteries that can be used to replace the battery in the Mini Memory Module at $7.50. TI will replace the battery for a bit under $40.

**User Notes is a column of tips and ideas designed to help readers put their home computers to better use. The information provided here comes from many sources, including TI home computer user group newsletters. MICROpendium will pay $10 for any item sent in by readers that appears in this column. Mail tips to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.**

## DIAGNOSTICS—

(Continued from Page 40)

mands.

Fortunately, commands can be entered as either whole words (somewhat lengthy) or as simple mnemonics or abbreviations. For example, the command to test the computer's memory can be entered either as "CHECK MEMORY" or "CM"; the result is the same either way. This speeds command entry somewhat for the advanced user, and yet it is still easy enough for beginners to get the feel of the program quickly. Quite nice.

The only other difficulty I have with the program, after using it for nearly a month, is that I still find myself periodically looking at the command list in the instruction manual. Ideally, Miller's Graphics should have included a quick reference chart, perhaps like the one for that other great program that requires commands to be typed in, TI-Writer. Actually, this program is only a minor inconvenience, and is easily solved if you want to take the time to create your own list.

Despite the rough command entry system, the kind people at Miller's Graphics did mercifully make the function keys of AD similar to the well-established TI pattern (FCTN "1" for delete, etc.). If you have used any TI-written software for any length of time, this program should seem very familiar right away, unlike the Cor-Comp Disk Manager which requires you to press FCTN "5" or "6" at various intervals to move between screens—highly irregular and slightly unnerving.

Over all, this program is very easy to use for those who are familiar with computers in general and the 4A in particular. However, for everyone else it may be only somewhat easy to use, and at first moderately difficult.

**Documentation:** The manual that comes with AD is nothing short of excellent. A complete list of commands and special keys is provided (a necessity with no reference card), and the explanations of the functions are well-written and to the point. Numerous well-labeled diagrams explain the features that may be hard to grasp. Additionally, the manual provides background information on disk drives and how they store data, all of which may not be too useful unless you are technically oriented, but still it is quite interesting reading. Also included are complete descriptions of the sectors on the disk where files and the disk itself are described. This information is essential for repairing damaged disks, and the Miller's Graphics explanation is by far more extensive than the information published with other disk editors. All in all, this manual is very informative and very well done.

**Value:** AD is undoubtably one of the most valuable programs you could ever purchase. Not only is it the most complete disk editor available, it's also an excellent disk manager, a workable disk copier and a fine tool for diagnosing your computer's ills. Purchasing all these utilities separately could well run into the hundreds of dollars! AD is a state-of-the-art program, and it is at least as good as the best on any other computer. It is programmable and simple to use once mastered and includes excellent and complete documentation.

If you have an interest in fixing damaged disks, if you want to know more about your disks or if you have need of any of the fantastic utilities included to make using your computer so much less complicated, then this program is recommended highly. There is no better program for this job!

## ACORN 99—

(Continued from Page 38)

sorted copy of a database and remove data items from all of the records of a database. This option also allows the user to add an item to a record after data has already been entered into the database.

Reformatting options allow the user to increase or decrease the length of a data item, change the sequence of items within a record, add a new item to any record, delete an item from any record and move an item from the master record to a detail record. In addition, the user has the option of directly accessing his databases through Extended BASIC programs. Acorn 99 provides a set of commands, each of which performs a single function, such as locating a record. A "preprocessor" utility is included that converts the commands, which are embedded in user-written programs, into Extended BASIC statements. Most users will probably use this Extended BASIC support to design custom printouts. The manual provides detailed descriptions of how to use Extended BASIC programming with Acorn 99.

**Ease of Use:** The fact that Acorn 99 is "different" from other data managers for the TI makes it challenging to learn. However, I found nothing about it that was not addressed in the manual. Having run through the process of defining and creating a database once, the user will be able to get down to business with no problem. Integrating Extended BASIC programs for custom data retrieval and printouts should not be difficult for anyone who is familiar with BASIC programming.

**Documentation:** Acorn 99 comes with as good of a manual as I have seen produced by a third-party. It is in the same league as the manual that comes with the Companion word processor. It takes the user through the program in a step-by-step tutorial and provides a wealth of reference material and appendices in its 100 pages. It includes an extremely well-defined table of contents. The last 30 pages has to do with Oak Tree System's Display Enhancement Package, which provides the 40-column text mode out of which the program operates.

**Value:**Acorn 99 goes a long way toward providing a sophisticated database program for 99 users. Because each program segment loads separately, using Acorn 99 takes time. A fast-loading utility would be very helpful in this regard. Users with a single disk-drive may use it without a lot of disk swapping because the program may be saved to the data disk, which is not possible with many file manager programs. This program offers a a lot of flexibility in data handling. It is unique and innovative.

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CALIFORNIA PROGRAMS, the makers of the ROCKETMAN Checkbook Program, have completed a new issue to complement their checkbook reconciliation system. This program will allow the user to enter all deductable checkbook entries to random access file storage. These files can be recalled at tax time to provide consecutive hard copy lists of all deductable tax items. It also allows for inpub designating which tax schedule the deductable items post to. This unprotected software is extremely flexible. BASIC programmers will be able to alter the code if they want to and thereby adapt the program to input and store other types of data such as business account balances or inventories etc. BDB will establish as many files as wanted, of any length. TI-99/4A, requires disk drive. $8.95. Write to CALIFORNIA PROGRAMS 4104 San Pablo Dam Rd. El Sobrante, Ca. 94803. (415)222-1626. v2n6

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PRK DataBasics Box 2642 Grand Junction, Colo. 81502 v2,n6

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## Reviewed in MICROpendium

**1984**

**February:** B-1 Nuclear Bomber, Tandon TM-100 Disk Drive, Void, Beanstalk Adventure, Microsurgeon, On Gaming, Database 500

**March:** Star Trek, Escape From Balthazar, Garkon's Getaway, Sky Diver, Mail-Call, Prowriter 8510 Printer

**April:** Monthly Budget$ Master, Budget Master, Home Budget, Thief, Donkey Kong, Khe Sanh

**May:** Companion Word Processor, Q*Bert, Mad-Dog I & II, Programs for the TI Home Computer

**June:** Creative Expressions Accounts Receivable/Accounts Payable, CDC 9409 Disk Drive, Starship Concord, Lost Treasure of the Aztec, ASW Tactics II

**July:** Theon Raiders, Introduction to Assembly Language for the TI Home Computer, Game of Wit, Pole Position

**August:** TE-1200, Tower, Galactic Battle, Galaxy

**September:** Wycove Forth, 99/4 Auto Spell-Check, QUICK-COPYer, Wizard's Dominion, Anchor Automation Mk XII Modem

**October:** Killer Caterpillar, ZORK I, Defender

**November:** 9900 Disk Controller Card/Manager, Super Bugger, Transtar 120S printer, Floppy-Copy, Data Base-X

**December:** Gravity Master, Data Base Manager System, Learning 99/4A Assembly Language Programming

**1985**

**January:** Super Sketch, Foundation Computing 128K Card, PTERM-99, TI-Runner

**February:** Super Extended BASIC, Beginning Assembly Language For the TI, ZORK II

**March:** Morning Star Software CP/M Card, WDS/100 Winchester Disk Drive, Sketch Mate, BMC Color Monitor

**April:** 9900 Micro Expansion System, Disk + Aid, Gemini 10X-15X

**May:** Character Sets and Graphics Design, Draw 'N Plot

**June:** GRAPHX, DATA BASE I

## FREEWARE—

(Continued from Page 41)

Sector Copy, Debug, Disassembler and TK-Writer loader—are load into the 8K module RAM and are accessed from the title screen menu. They need not be reloaded because the module is battery backed. Source programs and documentation are included.

TI-SORT is a machine language utility that loads under the TI-Writer and TK-Writer utility option or Option 5 of E/A. Data files created with the TI-Writer or E/A editor can be sorted rapidly in RAM with this utility. The program uses standard TI menu format and sorts DIS/VAR 80 files. Files of up to 300 records may be sorted, using either the quicksort or shellsort algorithm and saved to disk. Files may also be printed. Single or bi-level ascending sorts are supported. Documentation and a demonstration file are included.

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