TANDY

The CoCo Column

by Dan Robins

Around this time every year, many Color Computer users and Radio Shack salesfolk await the arrival of the new catalog to see what new goodies the folks at the Fort Worth Towers will surprise us with. The catalog for 1988 was no exception. Some of our old favorites are still there, but this year there are a few surprises. Unfortunately, a few items from last year's catalog announced as "new" had yet to appear. In this month's column, we'll take a look at the software and hardware available from Radio Shack for the Color Computer.

New Hardware On The Horizon

Ever since disk drive systems from Radio Shack were available for the Color Computer, they came as a standard 35-track single-sided drive. The new FD-502 Color Thinkline Disk Drive system (catalog number 26-3133) is now equipped with a 40-track double-sided drive. Using this system, out of the box and with Color Basic, you may not be able to tell the difference. However, using the OS9 Operating System (or with a little help from someone with electronic experience), you can access both sides of this drive. It's nice to see Tandy finally recognizing the power that the CoCo can really acquire. The Drive 0 system which includes the necessary disk controller costs $299.95. Additional drives for the system can be purchased for $179.95.

A new Deluxe Color Mouse is listed in the catalog for 1988. Although not available at press-time, it differs from it's predecessor, Color Mouse, by offering an additional select button. To my knowledge there is no applicable software yet that uses this extra select button, but under the Level 2 OS9 operating system there is a system call which detects the additional button being selected. We'll hopefully see the use of this addition in the future. The Deluxe Color Mouse, when available, will cost $49.95 (catalog number 26-3125).

With the advent of high-resolution graphics of the Color Computer 3, the joysticks available from Radio Shack were hardly useful in a 640 by 192 resolution mode. Along comes the Hi-Res Joystick Interface (catalog number 26-3028), and at a reasonable price of just $9.95. The interface uses the joystick and cassette ports to detect the higher resolution. I consider this piece of hardware to be one of the best ideas Radio Shack came up with this year, and for the Color Computer 3 owner it is a necessity!

An Educational Experience

Two new software releases for the younger set are included in the new Radio Shack catalog for 1988, both of which I found to be fun! Winnie The Pooh (In The hundred Acre Wood) is an OS9 Level 1 adventure game that requires a disk-based Color Computer 1, 2, or 3 system. Unlike adventure games for adults that require you to type in a command, this game provides the youngster with the possible answers. You select the answer in one of two ways, with a keystroke of the first letter of the answer, or by moving a cursor next to the answer and pressing ENTER. The object of the game is to pick up items that Winnie The Pooh's friends have left outside and return them to their rightful owners. You only have a certain amount of time to accomplish this task before the Big Winds come along and scatter the items away. I also like the way the program lets you know that it may be the wrong time to take certain actions, like laying down an item that you picked up when you need to lay that item down later. Winnie The Pooh (catalog number 26-3244) is available for $34.95.

For the child that likes the arcade-type action software, Donald Duck's Playground is the answer. Also an OS9 Level 1 game requiring a disk-based system, you control the actions of Donald Duck in his quest to build a playground for his nephews in Duckville. You begin the game by earning money at businesses like Amquack Railroad or McDuck Airlines and after finishing a job, Donald goes to the bank to get paid. At the bank you are given a graphic display of the counting of the money. This is helpful in teaching children how to count money! Once Donald has earned some money, he can go shopping at various stores for playground equipment and install them at the playground. Donald Duck's Playground (catalog number 26-3245) is well worth the asking price of $34.95.

It would be unfair not to mention that Sierra, the software writers, include a "What's Next" section in the documentation for both of these programs. This section, in relation to the game, gives children additional activities they can do around the home that are both fun and educational. A word of warning however, if you purchase these programs for your children they may end up using the CoCo more than you!!

Updates To Program Packs

With the release of the new catalog, we also see two updated program packs. In the early days of the CoCo, Color Scripsit and Color File were two welcomed releases from Tandy. They gave us the ability of word processing and database management. As the new Color Computer 3 was released last year, Tandy saw the need to update these programs to take advantage of the new powers of the CoCo 3, and also updating the program to make it more user-friendly (and competitive). And they did it...almost.

Both programs still use a cassette recorder to store and retrieve data files. Understandable, as program packs and the disk controller use the same memory space within the computer. Both program packs are still compatible with the Color Computer 1 and 2, and take advantage of some of the Color Computer 3's features.

I was impressed with Color File II. The new features include RGB or monochrome settings and true lower case for Color Computer 3 owners, as well as an 80 column text mode. I was impressed by these additions in relation with it's predecessor. With a 64K machine, you have almost 50,000 bytes of storage area. It still includes file managers for warranties, addresses, and even your VCR tapes. My favorite though, is the option that lets you define your own database. I feel that the author, Steve Bjork, did a good job in updating this program.

Color Computer 3 owners may find a disappointment though, with Color Scripsit II. As I opened up this package, I had hoped to find a new full screen 80 column text mode. But that was not to be. Even though there was an option that allows the columns to SCROLL to 80 columns regardless of computer, the widest screen display is a 38 by 24 column mode for CoCo 3 users. Color Computer 3 owners will find a color-change feature that allows ten different settings. On a good note however, Color Scripsit II does include a text formatter that gives you most of the features of it's competitors.

With both programs, Tandy took

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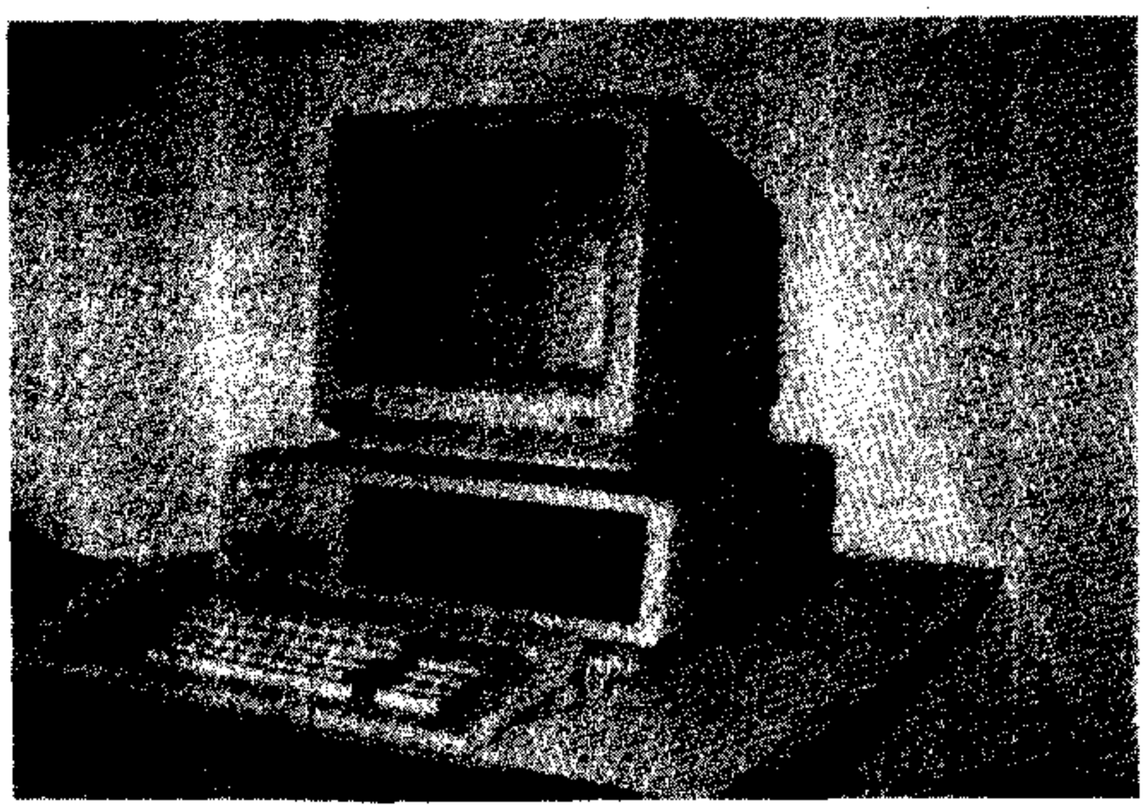
TI Forum



Geneve 9640 in IBM's clothing.

by Ron Albright and Jonathan Zittrain

Latest on Myarc

The months of October and November are shaping up to be crucial ones for Myarc, the company that has been releasing a new TI-compatible computer into the marketplace.

Several October deadlines have been acknowledged, including the release of MDOS (Myarc Disk Operating System) Version 1.0 (without batch processing commands) the first week of October. MDOS Version 1.1 (with batch commands) was scheduled for mid/late October.

The Geneve 9640 computer is currently available as a card which fits into the 99/4 Peripheral Expansion System and includes a standard or enhanced IBM-style keyboard. The current product, sans MDOS (which, when released, will be in diskette form and sent to all current 9640 owners), can at this point, only emulate a 99/4A. The 99 mode is highly compatible with the 99/4A, and runs most TI-99/4A programs at an increased speed.

The 9640 can be used with most existing 99/4A peripherals, including a relatively low-resolution TV set or TI monitor.

Most 9640 owners will want to upgrade to a higher resolution monitor almost immediately, but the ability to retain existing equipment contributes to the "graceful upgrade" concept; purchases of the computer and more advanced peripherals do not need to be made at once.

Other basic offerings of the 9640 are its RAMdisk and print spooler, roughly comparable to Myarc's 512K memory expansion card for the 99/4A.

A Multiplan upgrade and My-Word word processor are available that will take advantage of increased monitor resolution, providing 80 columns of text display.

My-Word, developed by J. Peter Hoddle of the Boston Computer Society, promises to be the standard word processor for the 9640 as TI-Writer is the standard for the TI-99/4A.

Myarc scheduled Advanced BASIC and Pascal to be released for the 9640 in mid-October.

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A new hard and floppy disk controller card is also eagerly awaited, with its DSR reportedly being written by talented programmer Mike Dodd. The card, according to Myarc, will support "streamer tape backup for the three 134 megabyte hard drives it controls." Expected retail price is $325.

The latest round of target dates by Myarc could make or break the 9640. Taken independently, each project could be feasible for Myarc to accomplish. As a group, the tasks of getting a computer operating system and several computer languages available might be a significant hurdle. It is widely known that most of Myarc's staff is not full-time or on-site, and coordinating a final effort to program and test everything within a few weeks will be difficult.

If Myarc can deliver, the 9640 has the potential to make a mark even greater than that of the /4A. If Myarc fails and continues to offer a machine without an operating system by the October dates, the 9640 could go nowhere as national dealers cancel waiting orders. Myarc has been living on borrowed time—which appears to be dangerously close to running out.

For the consumer considering purchasing a 9640, it is a slight gamble. If the 9640 takes off, the current $530 list price probably will as well. Those who buy the 9640 in this uncertain period will then have saved both financially and in waiting time for receipt of the machine. On the other hand, those who buy the machine now might want to ask themselves if they would be satisfied if no further related products or software were to appear for the 9640.

Myarc has changed its tactics for distribution of 9640-related software, including MDOS and My-Word. Versions of the software had been available on commercial telecommunications networks and local bulletin boards, distributed freely. Myarc is now beginning to limit distribution of such software, disallowing further updates to be made available through the networks. Instead, consumers will need to pur-

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heed of one request heard most by users and that is the ability to change printer parameters Color File II (catalog number 26-3110) is available for $24.95, and $29.95 for Color Scripsit II (catalog number 26-3109).

New Games For Level 2

Quite a few of the new games listed in the new catalog were developed using the Level 2 OS9 operating system. I am especially impressed with those written by EPYX Software. Games like Koronis Rift (catalog number 26-3298), Rescue on Fractulus (catalog number 26-3299), and Rouge (catalog number 26-3297) are available on other computer systems and their conversion to the Color Computer were done well.

My personal favorite of the three is Rescue On Fractulus. With this game you are the pilot of a space craft and your mission is to rescue pilots abandoned on the planet Fractulus. You first have to home in on a grounded pilot, land, pick up the pilot and continue. You score points by the amount of time you play the game and the number of pilots you pick up during any given mission. But watch out, Jaggi defenses on the planet aren't going to make it an easy time, with both their land and air defenses.

The graphics of Koronis Rift are similar to those of Fractulus, but the game scenario is different. On Koronis Rift you pilot a space craft that lands and scavenges old ships for their equipment, some of which contain mysterious or different powers. You may acquire those powers by installing them in your ship or collecting points on the equipment. Once again, guardians of the planet will try to make your stay as short lived as possible.

The first release of any software containing the OS9 Level 2 shell, came in the package of the adventure game Rogue. This spaceship game keeps you busy as you battle monsters, collect potions, and face all the risks in search of the Golden Amulet. All three games are priced at $29.95.

Zonerunner (catalog number 26-3286) is one of the latest releases from Radio Shack (at press time), and uses one of Level 2 OS9's high resolution screens. A good show of what the new graphics commands can do, you are a space trader making good deals and shooting down pirate ships. Programmer Greg Zumwalt wrote this program which sells for $29.95.

Also included with the release of the new catalog is the new game Cavewalker. A good release for Level 1 OS9 owners, the action is based on a VDG hi-resolution PMODE 4 screen. It does include a setting that will allow Color Computer 3/RBG monitor owners to see the artifact colors. Cavewalker (catalog number 26-3246) is available for $24.95.

If you are always in search of good applications, then I have two in mind for you. The TS-EDIT/TS-WORD/TS-SPELL combination has always been a favorite of many, but TS-SPELL just got one better. For Level 2 OS9 owners, you'll like the windowing capabilities of the add-on program TSSPELLW. It frugally, but nicely, uses overlay windows while checking the spelling of your data file. The master dictionary contains over 100,000 words, and then any additional words you wish to add to your personal dictionary. (As a matter of fact, I am using it to check the spelling of this article!) TS-SPELL (catalog number 26-3266) is a steal at $39.95!

When the stock Level 2 OS9 Operating system was released, it was evident that a few of the modules (programs) which many of us were using with Level 1 OS9, were not included with the new system. The apparent idea was that the new operating system could be compatible for entry level users and thus the need for a developers system. The answer came in the form of the OS9 Level 2 Development System (catalog number 26-3032) which retails for $99.95. It updates most of the new modules for compatibility with the new operating system and includes a few new additional commands. Interesting additions include an RMA assembly language assembler, RAMdisks, and new definition files for C programming in the new operating system's environment. It should be mentioned that two apparent files were left out of this system; the definition files RBFDefs and SCFDefs. For the serious high level language programmer, I would highly suggest looking into this software.

What About Multi-Vue?

If one looks at LAST years catalog, we saw the listing for a new software system called Multi-Vue. In the past year the answer to the Deskmate type looking system had yet to appear. I am hopeful by the time this is published it is available for sale, but I quit holding my breath some time back. Although I undersand that Tandy cannot sell it until they receive it from the development company (Microware), the release of this software remains to be one mystery amongst CoCo users!

There are other titles listed in the latest catalog not yet available for sale, some which look promising. Applications like Home Publisher and the Color Computer Artist are listed. Games included as new offerings are King's Quest III, Sub Battle Simulator, Flight Simulator II, Microscopic Mission, and Where In The World Is Carmen Sandiego? Additional program packs promised are Thexder, Shanghai, and Springster.

As these additional titles begin to materialize it looks as though Radio Shack is still supporting the Color Computer both old and new, but also taking an approach towards moving it's software selection to the OS9 operating system. Time will tell.

In next month's column, we'll take a look at some new RSDOS software, and share the source code for some commands you can add to your Color Computer 3. The new commands, written by Chris Babcock, will allow you to save and retrieve high resolution graphic screens, and jump from one high resolution screen to another without clearing it. ●

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ATARI

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QUICK PIX lets you put Print Shop graphics into your AtariWriter or PaperClip documents. Graphics can be positioned within text as desired. Individual versions for AtariWriter or PaperClip, each $29.95. White Lion Software, PO Box 357, Ridge, NY 11961.

TRAILBLAZER is a whole new dimension where a soccer ball races through networks of color grids. Hyperspace is the playing field. Split-screen play allows for a human opponent or the computer. Cost is $29.95. Mindscape, Inc., 3444 Dundee Road, Northbrook, IL 60062: (800) 221-9884, (800) 942-7315.

TURBOBASE is a full-featured database system offering a file manager, report generator, spread sheet, open invoicing, statements, G/L, P/S, AR, AP, inventory, payroll, mailing and numerous other features. Unprecedented 8-bit versatility and capacity. (Reviewed in *Computer Shopper*). Cost is $159.95. MicroMiser Software, 1635-A Holden Ave., Orlando, FL 32809; (305) 857-6014.

VIDEO TITLE SHOP lets you design colorful title screens and artwork for your business, school or home videos. The program offers a variety of font styles and sizes and lets you take picture backdrops from other paint programs. Program includes MicroPainter Plus and graphics editor built-in. Cost is $29.95. DataSoft/Intellicreations, 19808 Nordhoff Pl., Chatsworth, CA 91311; (818) 886-5922.

Next Month

We'll dive right into 1988 with more news, reviews, programs and reader mail for your 8-bit Atari. Until then, I wish you a joyous holiday season and a happy new year.

Readers' questions, comments and contributions are welcome. Please enclose a self-addressed, stamped envelope for a personal reply. (Only a selected number of personal replies can be given each month). Address all correspondence to Jeff Brenner "Applying The Atari 12/87" c/o *Computer Shopper*, PO Box F, Titusville, FL 32781. ●

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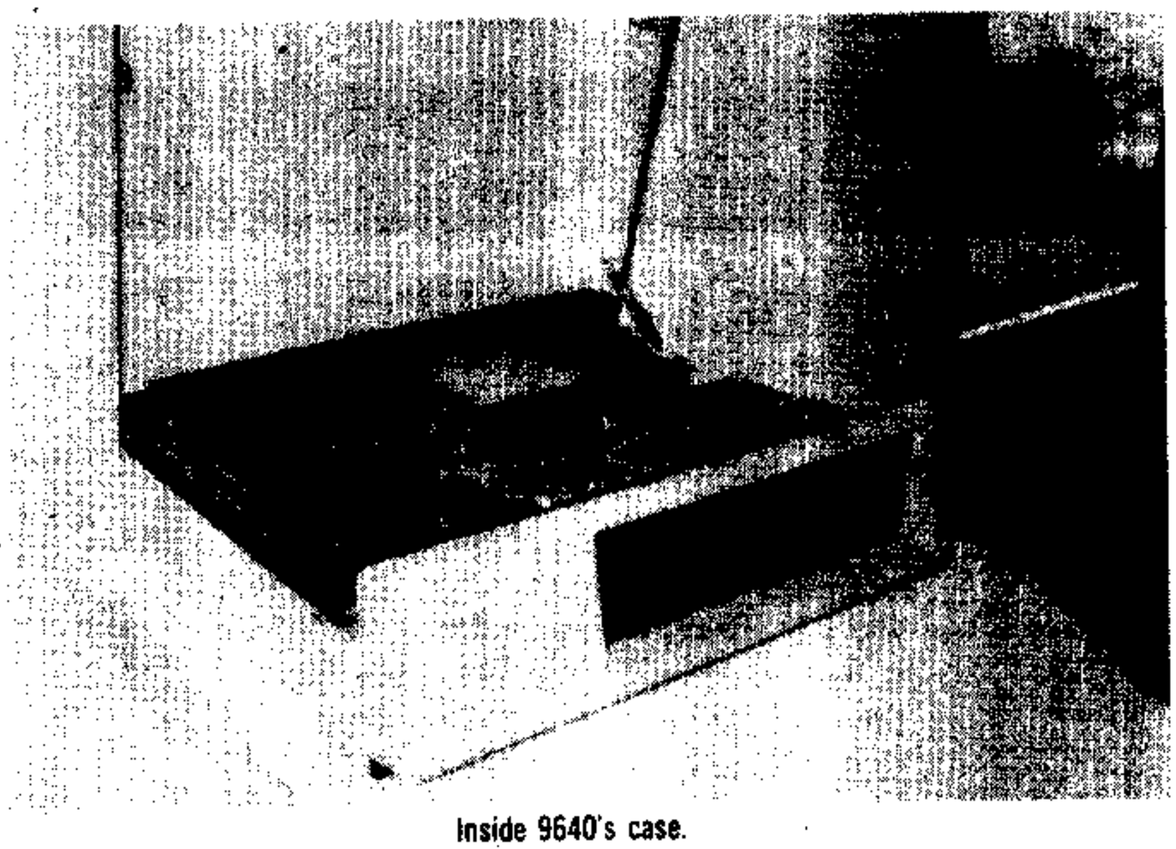

Inside 9640's case.

chase software through Myarc dealers and distributors.

I (JZ) still await a 9640 from Myarc for review. That review will come not long after the 9640 does—so there is more to come, hopefully by next issue.

At the recent TI fair in Seattle, the 9640 was reportedly well-received. Those impressed with the machine's speed and the 80-column My-Word bought a 9640 card on the spot—about ten total were sold.

Other attractions at the fair were Jim Horn and Scott Darling of CompuServe and GEnie, respectively, demonstrating telecommunications and lecturing. Over 600 attended the event, according to Barb Wiederhold, fair organizer.

CompuServe's TI Forum has scheduled weekly conferences with many of the leaders in the TI-99/4A world. Upcoming conferences include Walt Howe of the Boston Computer Society, Jerry Coffey from the Washington, DC, area, J. Peter Hoddie & Paul Charlton, Warren Agee, Barry Traver of Genial Computerware, and Bill Knect of the Houston Users Group.

Ron's Part
Christmas Time

Though this issue will arrive in your mail box in November, it is certainly time to start thinking about what you want to get for your TI 99/4A for the holidays. Lest you have had your head in the sand and have not been following along in the TI Forum column about all the new software and hardware for the TI, there are some incredible new developments in both areas for your machine. If you don't have catalogs available from our three major mail order suppliers, send for them immediately. Tex-Comp (P.O. Box 33034, Granada Hills, CA 91344), Triton (P.O. Box 8123, San Francisco, CA 94128) and Tenex (P.O. Box 6578, South Bend, IN 46660) all have some products available that you should not miss out on. Get on the mailing list of these distributors as that is one way to stay informed about product availability for the 99/4A. And, of course, continue reading the TI Forum!

Speaking of Christmas

This month's winner, as promised, hits the jackpot. In the Christmas spirit, Carol Tapia of Wylie, Texas, comes away with the goodies. They are:

The "Count-Sil" spreadsheet software from Jim Horn, head Sysop of CompuServe's TI Forum (type "Go TIFORUM" at any prompt). This disk-based software is a simple, but full-featured answer to those who fell on their manuals in despair trying to learn Multiplan. Carol also wins a set of 4 TI books from the Howard Sam's series, *Introduction to Assembly Language* by Ralph Molesworth and the classic *Programs for the TI Home Computer* by Steve Davis. Congratulations, Carol! There will be at least one more drawing. If you have already entered, your card is still in the running. If you have not, this is the cheapest gamble you can make for the possible return there is. Send a postcard to the TI Forum Software Giveaway, *Computer Shopper*, 5211 S. Washington Avenue, Titusville, Florida 32780. What have you got to lose?

Freebies Continue

The offer for a free brief glimpse at the "Best of" some of the dozens of user groups newsletter continues. This month's handout features several hardware "hacks" (how about how to put the Extended BASIC cartridge into your peripheral expansion box?). To get yours, just send a self-addressed, stamped envelope to us at *Computer Shopper*. And thanks to the user groups for providing the material. The newsletters remain superb.

Speaking Of User Groups

The August issue of the *"Bytemonger"* newsletter from the Bluegrass 99 Computer Society (Box 11866, Lexington, KY 40578-1866) included a very informative article on "TI Writer Tricks With Class." Written by Edward Stamm, there were several neat hints on using this venerable word processor. Here are some of Edward's tips:

"BEL When I have a long document (30+ pages), I sometimes transilliterate some symbol I don't use (e.g. "!") into ASC "7" (BELL OR BEL). I then put ! at various places in the text. Then, when the text is printing, and I'm in the kitchen cooking hotdogs, I know exactly where in the text the printer is printing. "!!!!" will make the printer bell ring four times."

After typing the text, and saving it (calling it, say, DSK1.XXX), I call up my "MASS" file (I literally call it "DSK1.MASS" for lack of a better name), which I always keep nearby. As many of you know, one file (when printed) can call up another using the

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TIMEX/SINCLAIR

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will appear in a future issue of *Computer Shopper*.) Front Page is able to take any text, such as _doc files or SuperBASIC programs, and incorporate them into your work. You can define the number of columns you wish your newsletter to have, as well as a number of other options. An improved version for expanded QLs is called Front Page Extra. Both of these programs will be examined shortly.

On the hardware side of the QL scene, the Miracle Systems Trump Card made its appearance in 1987. Basically, the Trump Card is an add on for your QL which includes 768K or RAM (bringing the total to 896K!) and a disk interface which will support either a 5¼ or 3½ inch disk drive. Other little "extras" featured with this card include such goodies as a soreen dump, toolkit, RAM disk and more.

But where has Sir Clive been during all of this? Since relieving himself of his original computer company (remember the sale to Amstrad in what now seems like the distant past?) Clive Sinclair has turned his energy to his long promised Z88 laptop computer. Like past Sinclair computers (this one cannot bear the Sinclair nametag) the Z88 has been talked about for what seems like an eternity, but as of this date I have not seen a Z88. Will 1988 be the year that it finally makes a real appearance? Only time (and I) will tell.

What is a reality is the fact that QL clones have appeared in the U.K.—most notably in the form of the CST Thor. Thor represents what the QL probably should have been in the first place. No microdrives, but standard floppy drives grace this "real" looking computer. With 640K, parallel and serial ports, battery backed clock and a separate IBM style keyboard, Thor is the first in a line of compatible computers. Thor can be purchased with either a single or double floppy, or even a hard drive. Thor 20 and Thor 21 are higher speed versions of the base model.

Cambridge Systems Technology—producers of Thor—are investigating the probability of bringing Thor to this country this year.

While we are on the topic of Sinclair clones, you may be surprised to find that there is a computer now being advertised by a New Jersey mail order house which is being sold as a ZX-81 clone! The PC8300 comes with a T/S 1500 type keyboard and a few other enhancements, but as any purchaser of this so-called clone will quickly tell you, there is very little compatibility between the two machines.

Topping the list of noncompatibility is the fact that the PC8300 does not incorporate the familiar Sinclair one stroke BASIC keywords. Because of this fact, standard Sinclair ZX-81 (or T/S 1000) cassette tapes will not load or run on this imposter. Although many of the T/S hardware additions might (or might not) work, unless you are a true hacker (in the old, positive sense of the word if you please) you would do well to stay away from the PC8300.

As you remember, a second annual Midwest Timex Sinclair Fest was held in Indianapolis. Once again this event was a smashing success and has spawned more such get togethers to be planned for the upcoming year. (A mini-fest was held last September in the great northwest.) A west coast fair is in the planning stage for this summer of '88, and a WinterFest has been planned for the Orlando, Florida area. The Sunstate T/S WinterFest '88 will be held on March 4-6 at the Orlando Marriott Hotel. Advanced registration is now being accepted at $5.00 per single or $9.00 per family. (The registration at the door will be $8.00 per single or $12.00 family registration.) For more information contact the Sunstate T/S WinterFest; 249 North Harden Avenue; Orange City, FL 32763. I hope to see many of you there.

What the coming year will bring is uncertain at this time. To keep in touch don't forget that *Computer Shopper* is your best source of information. Both Mike O'Brien and I will keep you in touch here on the printed page, and I hope to see you online with Delphi where *Computer Shopper* Information Exchange offers a place for Sinclair enthusiasts to get together to discuss anything on their mind. A data library has T/S 1000, T/S 2068 and QL programs and information for the taking. Want the latest information concerning upcoming Sinclair gatherings? CSIX is the place to find it! Come together in a real time online conference with your fellow Sinclair owners. Watch this column for announcements of special upcoming events. ●

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"Include File" (.IF DSK1.FILENAME) formatting command. To ease things a bit, I put nearly all my formatting commands in one file, with the last line being ".IF DSK1.XXX." The formatting commands I use (but you may prefer others) are:

```
.LM 9
.RM 69
.PL 58
.LS 2
.FI
.HE^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^%
.IN +5
.IF DSK1.XXX
```

This will give my double-spaced text, about 25 lines per page, nifty margins, with page numbers, no less. Don't forget to load the file "DSK1.MASS," not "DSK1.XXX when formatting."

Thanks for the tips, Edward and thanks Bytemonger!

From The Tigercub

From the genius of Jim Peterson (a.k.a. Tigercub Software, 156 Collingwood Avenue, Columbus, OH 43213; offering over 120 original programs for $2 each plus $1.50 per disk or cassette), there is a little ditty to dress up your XB programs.

Or, if you want to do it backwards—

Interference

Here's a tip that has made the rounds in several newsletters. "When experiencing background noise, such as humming or buzzing, with the TI modulator and your TV, a very slight adjustment of the modulator will usually clear it up."

1. Turn the volume of the television all the way down.
2. Select the Master Title Screen on the computer.
3. Fine tune the television for the best picture.
4. Use a small screwdriver to carefully remove the cover from the modulator.
5. Increase the television volume to ¼ range.
6. Insert the blade of the small screwdriver into the slotted core of the coil marked "L3" on the printed circuit board. This core will crack if too much force is applied to it!
7. While listening to the buzz of the TV speaker, slightly rotate the core no more than 1/8th turn in either direction until the buzz is at a minimum.
8. Replace the modulator cover.

Remember: Any hardware modification, such as this, must be done at your own risk and may void warranties on equipment that may be in effect.

Databiotics

While we have not received any information or products directly from Databiotics (P.O. Box 1194, Palos Verdes, CA 90274), I ran across one of their flyers in a user group newsletter. I have no idea about product availability, but there were some interesting new products listed in the 6-page brochure I saw. From hardware (something called "Grand RAM," a card for the expansion box that appears to be a battery-backed RAM-disk), to new cartridge games ("Black Hole"), new productivity software ("Desktop Publisher"), to educational software ("Stargazer"). As stated, I have not seen any of these products, but I know Databiotics, from past products, is a solid producer of 99er products and has been for years (they made the Superspace modules and 4A/Talk, a super terminal emulator package). Write these folks immediately for product information and availability. And just in time for Christmas!

More Ryte Data

Bruce Ryan of Ryte Data (210 Mountain Street, Haliburton, Ontario, Canada K0M 1S0; 705-457-2774) sent us the latest issue of his R/D Computing newsletter and a couple of snapshots of the "99AT Expansion System" his firm is developing (see Figures 1 & 2). The new system, designed by Pat Saturn of MicroStuph, is, basically, an IBM-style expansion chassis, modified to hold TI expansion cards. A beautiful device, as you can see. I am not sure (again) about availability, but write Ryte Data and check this out. It seems perfect for the console-only user wanting to upgrade and facing the difficult task of finding a TI expansion box. Tentative price was $155 (U.S.).

Scott, What You Have Done!

I had the chance to drop by the TI Roundtable on the GEnie network this Sunday. I have not had so much fun online in months! There were the usual TI experts (Tom Freeman, Steve Langruth, Howie Rosenberg, and the Sysop, Scott Darling, discussing the ins and outs of both the TI and the 9640 from Myarc. ●

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accepts data during disk access. It also, like the editor/-assembler and terminal program that Cer-Comp Ltd. advertises, has two "ultra fast" RAMdisks for 512K support. Now that sounds high-tech to me. As one who is not, at least yet, enamored with OS-9, I am very impressed with the software that I see being sold and promoted by Cer-Comp Ltd.

I should explain that since I have never seriously used OS-9, I am really in no position to be judging its relative merits. Perhaps when I do start using it, I will prefer it to RSDOS. Who knows? I am, however, enamored with the 6809 microprocessor (68B09E, to be exact) and the CoCo. I like programming in assembly language and can utilize as much memory and get higher resolution on a monitor using it than I could using BASIC 09.

Tandy, from my understanding, has virtually dictated to third-party software developers that they have to use OS-9. I have a great deal of respect for the people that swear by OS-9 and I may find that once I start using it, I will see things their way.

Meantime, I am enthralled by the seeming quality of software designed to run under RSDOS by companies like Cer-Comp and feel like spending my hard-earned dollars on their products.

My thinking goes like this: OS-9 cannot break the 64K barrier any better than assembly language. It is still smoke and mirrors that allows 512K RAM to be used at all, whether one uses OS-9 or assembly language. In terms of ease of use and performance, I would rather buy a product that runs in the CoCo 3 "native mode" than have to boot OS-9 and also a word-processor.

However, I am a hacker at heart and would like nothing more than to become proficient in the Unix-like OS-9.

I have a dream, which I am sure is shared by many Color Computer 3 programmers and hackers, that in the not-so-distant future Radio Shack will come out with a CoCo 4 that will have a 68XXX microprocessor. It will have built-in 3.5 inch disk-drives and more function keys and a seperate numeric keyboard. If it ran under OS-9 and was reasonably priced, I think it would be a tremendous success!

Meantime, I find programming the 6809 to be challenging and rewarding in its own right.

Soon after I write this, I plan to sit down with OS-9 Level 2 and really become proficient in it. I am convinced that nobody can call themselves a "serious" CoCo programmer and ignore OS-9.

I hope people who know more than I do about the CoCo will bear with me on this. I welcome any letters from readers who have suggestions or comments about this column.

One of my goals in writing this column is to get on with hacking the CoCo. I am tired of reading columns that fail to realize that the CoCo 3 has been available in Radio Shack stores for almost a year and that we all know by now that it has a different keyboard and a Gime chip and a MMU, etc.

I felt that if I read one more column that told me that the CoCo 3 had function keys, Alt, Ctrl, and 21 new commands in BASIC, which we all know by now, I was going to scream!

Surely we all know the features and technical differences between the CoCo 3 from its predecessors. Now it is time to move on and look at the incredible software and hardware available for this computer that help to unleash its full potential. ●

IBM Compatibility For The TI 99/4A

by Ron Albright

Review of Triton Turbo XT

There is a great deal of debate these days about which upgrade path users of the 99/4A computer should take. That is, of course, assuming these users have reached a point in their computer needs that upgrading is necessary. I think that is the key point in the whole issue. Have you come to that juncture? If TI Writer is all you need for your word processing, and Multiplan, PRbase (or Total Filer), and Fast-Term fill your spreadsheet, database, and communication requirements, why upgrade? For those whose computer uses are related to home budget, education or learning programming, or short correspondences with friends, the 99/4A can, quite probably, still fill all those functions admirably. For all but those with unlimited resources (i.e. "money to burn"), the argument to change computers for the sake of using the "fastest and the latest" is fallacious. A home user does not need an 80286 IBM-AT or clone running at 16MHz. Period. Their need for dBase III + or Lotus 1-2-3 or all the features of Crosstalk XVI is equally questionable. Change for the sake of change is a luxury few of us can indulge in.

But there are times when one does need to upgrade to new technology. For someone who is using the latest spreadsheets or relational databases at work and needs to be able to carry some of that work home, then it may be time to think about buying a new computer. If one undertakes starting a home business and needs software to manage the books, or a complicated mailing list, or extensive graphics needs, there may be software avialable that might do these jobs better than what is available for the TI 99/4A. For writers who plan the "Great American Novel," a word processor that can handle several hundred pages, or a thesaurus, or a 100,000 word spelling checker, or an outline program, or indexing software may be essential. The point of all this is a simple one. Before you buy anything, assess your needs. Make a list of what software requirements you need. Then, look around for the software to fill those needs. Only at that point should you consider the hardware—a new computer. Find the best software available to fill your requirements, then pick the computer that will run it. Not the other way around.

Let me make one other point here. Look very closely at what is available for the TI before you decide it no longer fills the needs. Get a catalog from TexComp (P.O. Box 33034, Granada Hills, CA 91344; 818-366-6631) and the other large TI mail-order houses. Read Micropendium (P.O. Box 1343, Round Rock, Texas 78680) and, of course, the TI Forum column here for advertisements and reviews. Check in with a local user group and find out what they know about software availability. Write JZ and I (and include a self-addressed, stamped envelope) stating your requirements and we will tell you if we know of similar software for the TI. If, after checking all these sources, you are absolutely sure the software is not available for the 99/4A and equally sure that you absolutely need the capability, then (and only then) are you ready to upgrade. The process of making the decision is time-consuming and a lot of work. But that is how it should be.

And The Point Is...

Where does all this lead us? JZ is busy preparing to review the new Geneve computer from Myarc. It is one path for upgrade. It will allow us to run our 99/4A software at increased speed and also allow for new software developers to write new software along the 9900-based chip family that can accomplish things heretofore impossible due to speed and memory limitations inherent in the 99/4A. This is, certainly, one upgrade path that has staunch advocates.

Another pathway has been made available from Triton (P.O. Box 8123, San Francisco, CA 94128; 1-800-227-6900). It is called the Triton Turbo XT. With the "bridge box" developed for it, the machine allows for owners to run MSDOS software while maintaining the ability to run TI 99/4A cartridge- and disk-based software at the same time.

What Is He Saying?

What Triton has done is make an IBM-compatible clone and interfaced it with the TI console. You can run your familiar 9900 software for the TI as well as use the immense software base of the 8088, or MSDOS, world. There is a catch. You still have to use the TI console and (in some cases) the Peripheral Expansion Box to run the TI software. In fact, you really are running two systems. The TI system and a clone. The only thing that they

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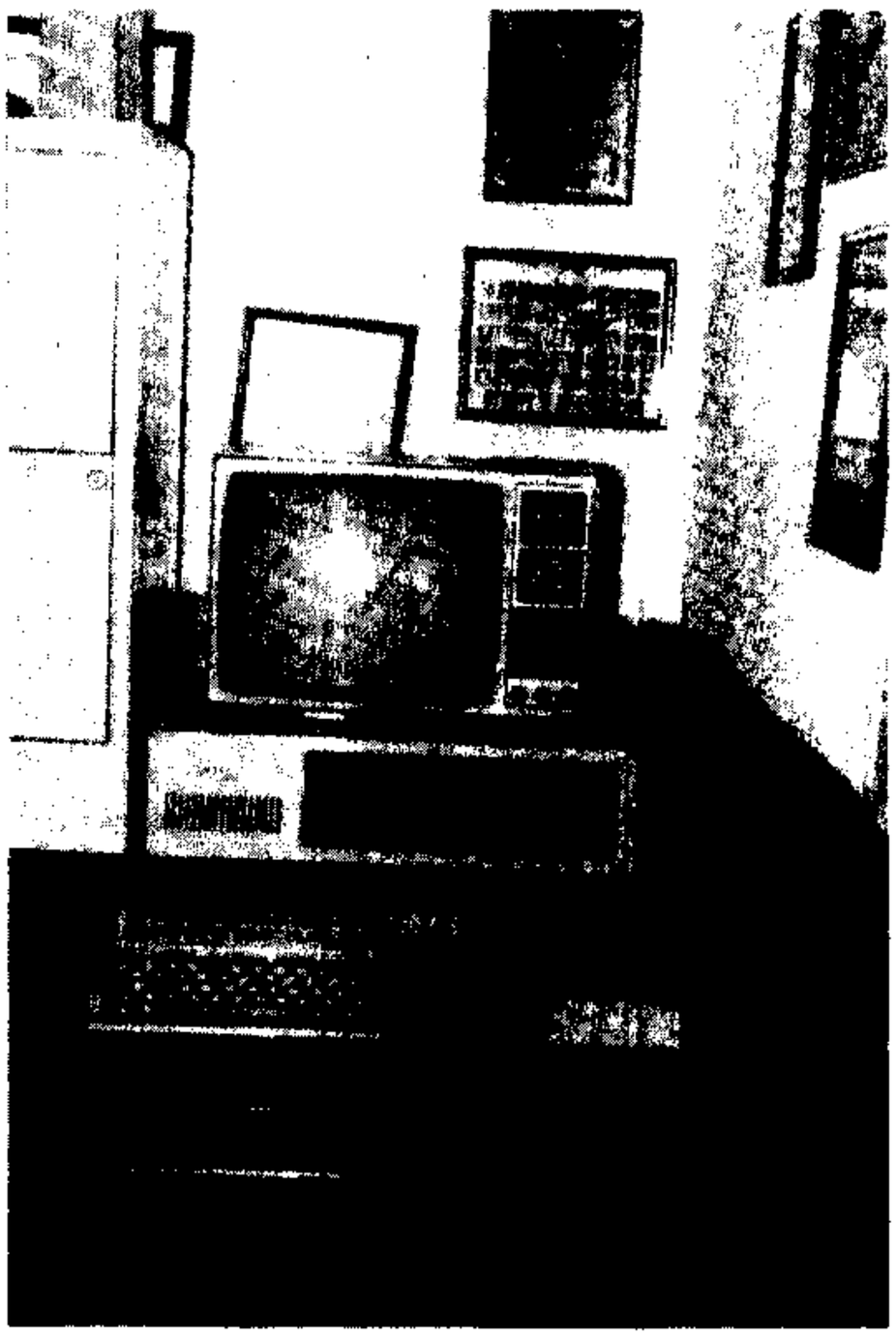

Figure 1—IBM-Triton Connection

Triton Turbo XT continued from page 359

will have in common is that the TI keyboard can, with the bridge box as an interface, control both systems. Thus, you will have two computers run off a single keyboard. Nothing more, nothing less. You cannot expect to have Turbo and the TI swap files on disk, use the same disk drives, or the same RS232 interface. The only hardware that can be common to both systems is the TI keyboard. You must still use the full TI expansion system to run your disk software. It is an odd mix, surely. Here is how things work.

Triton's Turbo XT comes straight to you as an IBM-clone with an 8088-2 microprocessor switchable between 4.77MHz and 8MHz. The basic system comes with 256 (expandable to 640) kilobytes of RAM, a single 360K drive (a second drive or 20 megabyte hard drive are optional) and drive controller, 8 expansion slots, a built-in clock/calendar, a parallel printer port, and a Hercules or CGA compatible video interface (Figure 1). There is a socket for an optional 8087-2 math co-processor on the motherboard. This is the "system unit" and has the physical appearance of an expansion box for the TI only a bit larger. Unlike the TI 99/4A system in which the main computer ships are located physically in the keyboard/console, in the MSDOS world the main board is in the "expansion box" or chassis. This is that.

The second device that comes with the Turbo system is the bridge box (Figure 2). It is a device roughly the size of two speech synthesizers that has a connector that plugs into the flex cable side port of the 99/4A console. It has a second side port that the TI expansion box cable (the old "firehose") can plug into. The bridge box contains the circuits that allow for switching between the /4A and the 8088 system and the software that allows the TI console to emulate certain XT-keyboard key strokes. Included are several cables that are necessary to get the system hooked up. There are separate manuals for the Turbo XT, the bridge box, and the parallel printer card as well as a technical manual for the XT's motherboard and the CGA graphics adaptor. That is it. In the basic system, there is no keyboard and no monitor. You will need a monitor. Not for the TI software, but to be able to read the 80-column displays of the MSDOS software.

The old television I had gotten by with for years on the TI system does not provide enough resolution to see 80-column displays clearly. It will work, but you will need to soon upgrade your glasses as well. To start with, get a monochrome monitor (the TTL type) which you can see advertised in these pages for $100 or less.

Hooking Up

I have to admit, that when I first examined the manual for the bridge box and saw the drawing of where the cables run, I was a bit overwhelmed. There are 5 separate cables that must be plugged into the bridge box and routed to either the XT chassis, the TI console, or the video monitor. While the drawing appeared to give new meaning to the term "rat's nest" (Figure 3), the connection were simple enough if you follow the step-by-step directions provided. I say that because I am the standard by which "simple tasks" are defined, and I did it first time out. You then plug in the bridge box's power supply, the TI console's power supply, the XT's power supply, the monitor's power supply, and the TI Pbox power supply and you are all set. You did buy a power strip, right?

Light Up My Life

There are 5 light/displays across the front of the bridge box. They are:

4A XT ALT OPT1 OPT2

These are your status lights. When the 4A light is on, you are in the TI mode and the keyboard is "standard TI" and TI peripherals are accessible. When the XT indicator is on, you are in the XT mode. The keyboard now emulates an XT keyboard and the Turbo's chassis and peripherals are active. Now, for the tricky part. If you have ever seen an IBM XT's or clone's keyboard, you may be able to guess the tricks. That keyboard has several keys not found on the little TI system. There are function keys (usually 10, designated F1-F10), and ALT key (which adds a whole new series of key combinations, like ALT-F1 or ALT-A), "page-up" and "page-down" keys, "home" and "end" keys, etc. This was a major "trick" that had to be pulled in making the TI console act like an XT keyboard. There is, as you are well aware, none of these special keys on the TI keyboard. But, thanks to the bridge box's software, you can get them with the TI console with only a modicum of effort. The remaining 3 status indicators on the bridge box keep us informed of these switches.

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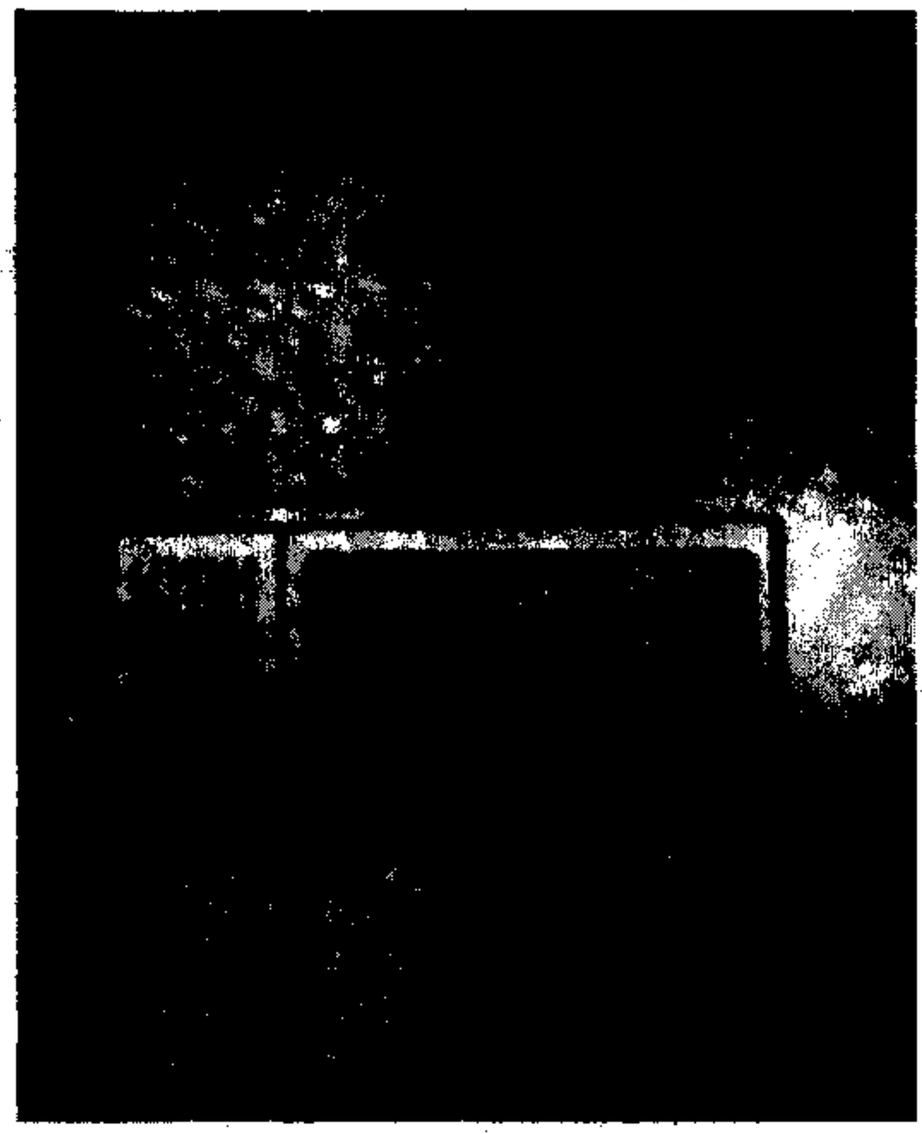

Figure 2—Triton Bridge Box

Figure 3

The Inner Limits Tour de Forth—Part 1

by Glenn Davis

These articles and this letter were written on the new Myarc Geneve 9640 computer using the MY-Word word processor. I have found the sytem to be useful as-is (except that no assemblers work).

The Forth-83 Dialect

After the Forth Interest Group (FIG) implemented FIG-Forth for a variety of microprocessors in the late '70s, they also decided to "standardize" the language. Forth-79 was the result of this effort. It quickly became apparent that this standard was incomplete and the Forth Standards Team rewrote the standard, which became Forth-83. That was in August 1983. Shortly afterwards, TI dropped the 99/4A but released the destined-for-obsolescence FIG-Forth for it. Now four years later, Forth-82 has become the standard and FIG-Forth has been eclipsed for "serious" programming. *Forth Dimensions,* the FIG publication (P.O. Box 8231, San Jose, CA 95155, $30/yr, 6 issues), emphasizes Forth-83 but still publishes some articles on FIG-Forth and Forth-79.

Bewildered novices who receive copies of the TI-Forth language package are often directed to read *Starting Forth* by Leo Brodie. The TI-Forth manual has an appendix describing the differences between it and the Forth used in *Starting Forth*. Until recently, you could walk into any bookstore and get a copy of this fine book. Last fall, *Starting Forth* (Prentice-Hall, 1987, 346 pages) was published in a significantly revised second edition using the Forth-83 standard throughout—the same dialect that his excellent companion book *Thinking Forth* uses. Appendix C no longer applies at all. Therefore, I am reviewing some recent books that present Forth-83 as well as a solution to the problem of using FIG-Forth to learn Forth-83.

More Forth Books

Brodie's introduction makes interesting reading, basically (no pun intended) answering the question "why Forth?" Forth is used in many applications including some glamourous ones like controlling the computers used to film the Star Wars and Star Trek space scenes.

If you're a Forth novice, the differences between Forth-83 and TI-Forth (which I will refer to as FIG-Forth throughout) are as often confusing as not. Brodie does a good job of footnoting the first use of such words (requiring you to store these words on disk and reloading them each time you pick the book back up and continue). Some words differ so much that he gives several pages or extended footnotes to their discussion. I'll discuss some major differences between the two dialects below. (Ignore everything about editors in these books. The TI-Forth manual discusses its editor).

If you have a Forth-83 compatible system the second edition is every bit as good (and better in some places) as the old edition. His discussion of defining words (he'll tell you what they are if you don't know) is far better than his light treatment in the other edition. Novices are the target of this book and Brodie is quite successful at conveying his ideas to them. Due to criticism of the first edition, Brodie has included two complete word indices (one by category, the other alphabetic) and a complete subject index.

Not that the book is completely without faults. His treatment of floating point numbers (those all-so-familiar ones of BASIC) is non-existant. He presents floating point as a monster not to be reckoned with—the kind of thing you'd use a calculator for and never discusses any words for them and instead tries to justify use of integer arithmetic. This view is not one held by all Forth programmers (me included). Integer arithmetic does have definite advantages in some situations. It is necessary to have every program run at lightning integer speed, or can some get by with the often slower but more realistic floating-point? Of course on the TI, the transendental functions (sine, exponential, log, etc.) contend for memory space with bitmap graphics, so it makes sense to use integer math when plotting graphs. However, if your program needs to use floating point data from another language why be restriced to integers? Yet Brodie touts Forth as a "manual transmission" language—more control, better acceleration—when compared to "automatic transmission" languages where everything is done for you (or to you?). Since the programmer decides on everything else in Forth, why not whether to use floating point?

The first commercial book that discussed Forth-83 was *Mastering Forth* by Anita Anderson and Martin Tracy (Brady, 1984, 216 pages). The audience of *Mastering Forth* is similar to that of *Starting Forth*: novices or people who use MasterForth from MicroMotion (for MSDOS

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Triton Turbo XT

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They are only on in the XT mode. The ALT light is one of these special lights accompanying the XT mode. It comes on when you press FUNC-CTRL (pressed together) in XT mode. The keyboard then responds to the CTRL key as the ALT key needed in many MSDOS programs. The OPT1 indicator comes on in XT mode when the FCTN-SHIFT. The TI console's number keys then emulate such keys as DELete, INSert, END, PgUp (page up), HOME, and PgDn (page down) found on the standard XT keyboard. OPT2 signals another key change and is elicited by pressing FCTN-ENTER. In this mode, the TI's number keys become the function keys, F1 through F10. Admittedly, with this magic comes some unavoidable confusion. But, trust me. With a few hours of experience with these keyboard gyrations, you will achieve great skill in switching between the various modes. Thank Heavens Triton provides a strip for the top of the console to show you exactly which keys are operative in each mode and the manual with the bridge box spends 6 pages on the nuances. This scheme was imperative to get the limited TI keyboard to run the software designed for a full-blown XT keyboard and all its possible keystroke combinations. And, the bottom line, it works.

Powering Up

You are going to have to deal with a significant amount of equipment here. Let's take inventory: a monitor, two expansion "boxes" (the TI and the Turbo XT), a TI console, and the bridge box. It is safe to set things as I have done and it takes up the least amount of space. I have the TI Pbox on the bottom (it appeared to be the strongest of the two boxes), the Turbo's chassis on top of that, and the monitor on top of that. Depending on how high your chair is, that might put the monitor right at eye-level. The console and bridge box can sit down on a steady place near that. Once all things are hooked up and you are ready to go, flip on the pwoer strip and fire up the system.

On power up, the factory setting is to begin in XT mode. You will need MSDOS to do anything with the XT. Without a DOS disk in drive A when you power up, things quickly die. You must have a DOS! Repeat! You must have...Got it? I highly recommend you buy the "System Support" software package available from Triton as an option. It not only gives you MSDOS, but also walks you through setting up a copy of your "boot" disk (the disk needed in your drive when you start up the system). It gets you started about as well as I have seen anyone or anything do it. It could be easily recommended to anyone getting started with any MSDOS based system. Included in the package are numerous other utilities (like a print spooler, a RAM disk—if you have the 640K model, and others) and a couple of terrific "Freeware" programs—DeskTeam (an integrated package of a word processor, appointment calendar, and more) and PC-File III, a highly-acclaimed flat-file (non-relational) database. Even further, from a menu system, you can select from tutorials and help screens to running programs and utilities right off the menu. For the beginner, this set of software is absolutely indispensable. Unless, of course, you have a

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Triton Turbo XT continued from page 364

resident computer guru in your home. I didn't.

It should be noted that you can open the bridge box by removing a few screws and then flip dip switch 5 to the open or off position and when you turn the system on thereafter, you will start out in 99/4A mode. No problem here—just personal preference. Since I used mostly TI software and only a word processor in Turbo mode, I elected to make the switch to /4A power-up.

Switching

Once you have booted things up correctly, it is all downhill from there. You can switch between Turbo mode and /4A mode straight from the keyboard. Since my default boot mode was set to /4A mode, I could switch to Turbo mode by simply pressing FCTN-CTRL-= (all three at once), then release the "=" key (still holding down FCTN-CTRL) and then pressing the ENTER key. Even more conveniently, if you are in TI Extended Basic, just enter the command "CALL XT." The XT light on the bridge box comes alive and the Turbo looks for its boot disk in drive A. You can switch back to /4A mode by pressing FCTN-CTRL-ENTER. Viola! The TI title screen.

The Magic

There is a certain degree of magic in this setup, and it is what I enjoyed the most. Picture this scenario:

You are using PC-FILE III and have constructed a massive database. You need to sort it. You know this will take some time. No problem! Start the sort, hit FCTN-CTRL-ENTER to switch to /4A mode, plug in Parsec and blast a few Dramites and Bynites. When wrists start to ache, your sort should be done. Return to XT mode and, Viola! While you were engaged by aliens on the TI the XT merrily went about its assinged duties and completed the sort. This, my friends, is called concurrent processing. Since the XT and the TI are separate and distinct systems using separate and distinct chips, processors and hardware, you can start something in XT mode and switch to /4A mode and do something else. The XT task will be completed just as if you never left it alone. It's amazing. But, alas, all is not Camelot. You cannot do the reverse. You cannot start a task on the /4A, leave to XT land, and return to a completed job on the /4A. Every time you enter (or return) to /4A mode, it is a "cold start"—that is, the system starts from the TI title screen. Too bad, but technically understandable. Other nice thing about this is, while I have yet to try it, you can, I am told, log on to a BBS in the XT mode, start a modem download, and switch to /4A mode and run TI Writer or whatever and merrily work while the download is being carried out by the XT. The possibilities are endless as is the potential time saving. It's, well, like having two computers, which, of course, is what you have.

Caveats

Several admonitions are mentioned in the manual for the bridge box that are worth repeating:

1. The ONLY items shared between the 99/4A and the XT are the monitor and the keyboard console.

2. Yes, an XT keyboard can be added to the Triton XT at any time [but you lose the /4A mode capability].

3. You can use a printer switch box (available in *Computer Shopper* pages for about $75) to share printers and modems.

4. The memory and disk drive in the XT is for the XT. The memory and drives in the 4A system are for the TI. The two units DO NOT share memory or disk drives.

Items 3 and 4 were designed to allow for concurrent processing. Keep these things in mind when evaluating this system.

Conclusions

This reviewer feels that the Triton Turbo XT is a fine machine. In XT mode I did not find any software incompatibilities with my favorite MSDOS software packages. The bridge system worked flawlessly over many hours of testing. Likewise, I found no major software incompatibilities in /4A software running on the bridge box system. As a XT clone, alone, one might argue that the Turbo is a bit over-priced. After all, similar clones with a keyboard and a monochrome monitor can be had for a similar price. But that comparison excludes the bridge box and the concurrent processing capability. I think, eventually, owners of the XT will want to turn their XT into a "stand-alone" system by buying an XT keyboard (around $60 in these pages) and turn the TI back into a television-console-Pbox system as well. However, that is one man's preference. But, when starting out, the Turbo XT makes some sense to me. A quick start with a minimum of investment with capability to add on as finances permit.

Think about it. If it is time to upgrade, the Turbo XT from Triton is a relatively painless way to get started and should be given consideration by any TI user finding himself lusting from the world of MSDOS.

Specifics

Triton Turbo XT comes as a base system with 256K RAM, single double-density, double sided 360K drive, parallel printer port, RGB/composite graphics display adapter, 8 full-sized expansion slots, 150W power supply, and bridge box for $499 plus $19.90 shipping. System Support Software (including MSDOS) $69.95. Second drive—$99; 384K memory expansion (installed on initial order)—$89; 20 megabyte hard card—$499.

Supplier: Triton, PO Box 8123, San Francisco, CA 94218; 1-800-227-6900. ●

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computers, not TI). The book claims to use only standard words and words defined in terms of those words and as far as I have been able to determine, this is true. But that doesn't excuse defining some words after they are used. As early as page 15, for example, CLEAR is said to clear the stack (CLEAR on the TI clears a buffer. Use SP! to clear the stack). Since CLEAR isn't a standard word, I looked in the index to find its definition, which wasn't on page 15 where it was referenced (and should have been). No, it was nearby (ahem!) on page 87 with a different—but equivalent—definition on page 96!

Other than isolated instances like this, *Mastering Forth* is a solid, well-written book. It does not have footnotes relating other Forth dialects. It teaches Forth-83 only. As such, it requires TI-Forth users to use a Forth-83 overlay. Topics are covered briefly, though the use of many examples makes up for the brevity. Ignore the discussion on the Forth editor in this book too.

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The third new book to discuss is *Forth: A Text and Reference* by Mahlon G. Kelly and Nicholas Spies (Prentice-Hall, 1986, a whopping 487 pages!). This text (far too complete to be called a mere "book") leaves no stones unturned. It introduces the reader to Forth and discusses all relevant topics completely with some significant digressions for more advanced users. Two dialects are used: Forth-79 (MMS Forth implementation) and Forth-83 (no particular implementation). Forth-79 is somewhat similar to FIG-Forth, especially with the mathmatics (how can "math" be different? I'll tell you next month) so that conversation is largely unnecessary. Forth-83 is sufficiently different that the authors discuss its quirks for several pages. At every instance where a word name may differ between the two dialects Kelly and Spies enclose the Forth-83 name in parentheses to avoid confusion.

I did find one error, which is so obvious whoever edited the book must have been "hittin' the sauce" at the time. On page 39 the authors try to tell us that 1B in hex notation is 12 in decimal (1B is 27). I suspect that what they really meant was 18 in decimal is 12 in hex. Kelly and Spies give plenty of problems to solve, each set following the relevant section—not all lumped at the end of the chapter. They are easy-to-work problems that don't take long to solve, but are (in sum) challenging enough to teach the language. As always, work the problems. Unlike most other Forth texts, solutions are given to the problems too.

Otherwise this text is so thorough that it even discusses Forth assemblers, a topic that few authors delve into. Though the assemblers discussed are Z-80 (TRS-80) and 8088 (MSDOS), many of the concepts they discuss apply to TI-Forth and its 9900 assembler. I'll be discussing the TI Forth assembler in a future Inner Limits. Floating point, strings, vectored execution, records and various internals are all discussed in depth.

Kelly and Spies did an excellent job at creating their appendices. The are (in sum) over 100 pages long and the word glossary includes Forth-83, -79, FIG, MMS, MVP and the Laxen /Perry F83! I recommend this book to all Forth programmers, except those who do not care about more technical and esoteric aspects of Forth. Forth novices should check out the former books before tackling this one.

Of course, when in doubt, check your local public library, school, college, or university to borrow them first. If a book is not at your level, try a different one. The Kelly and Spies book is one that you will want in your personal library, though.

Learning Forth in this environment is especially difficult since the dialect your machine runs is not the one described in the media. So, with the help of the Michael Laxen and Henry Perry Forth-83 model F83, I created the TI-Forth Forth-83 compatibility screens. This is about 3500 bytes of Forth code that will allow your TI to run 98% of Forth-83 code. The small amount of incompatibility will only be obvious if the code you try to run pushes the limits of the system. For example, some Forth-83 words require 80 bytes of buffer space, but only 64 are provided by FIG-Forth.

Most words in this set are redefined FIG-Forth words so the "old" definitions you knew and loved are "gone". If you follow the Forth-83 texts closely and temporarily forget you ever had a FIG system you'll be fine. Among the "not strictly compatible with Forth-83" words are EXPECT (uses the FIG expect so two nulls are appended at the end and will require two more bytes of buffer space than a Forth-83 program might allocate); BASE (FIG will only convert up to base 70, Forth-83 specifies up to 72. Fixing this is too much trouble) and #TIB (the worst kludge I've ever written, but it does work). Several words are not stricly Forth-83, and some come from F83.

The Forth-83 compatibility words are a large enough set to use with *Starting Forth*. In every chapter, at least one of several words suggested by Brodie are defined or are easily defined. Unusual Starting Forth words included are the mixed-length words M*, M/, M*/, and M+.

For Forth Novices

If you're a complete Forth novice, you need to "boot up" your Forth system. To do this, place your Editor/Assembler cartridge in the computer and your TI-Forth system disk in DSK1. (Other Forth systems such as Wycove Forth and Super4th are booted differently —see the manuals with those packages for instructions.) Choose option #3, LOAD and RUN. For the filename, enter DSK1.FORTH. After booting the Forth system should display a menu and a cursor. If it doesn't try these steps over again, check that the Forth system is on the disk, etc. Type -EDITOR or -64SUPPORT depending on whether you think you can read the tiny characters in the 64-column editor (monochrome monitor users, for the most part). If you have trouble reading your screen choose -EDITOR as it displays in a 40-column format; the other one displays in a harder-to-read 64 column format using the bit-map graphics mode. This is, of course, explained in your Forth manual.

If you have a second disk drive, place an initialized disk in DSK2 (for now, we'll pretend you have SSSD drives), otherwise place this disk in DSK1. If you don't have an initialized disk, place one in a drive as explained above and type 0 FORMAT-DISK if you placed it in DKS1 or 1 FORMAT-DISK if placed in DSK2. This will be your data disk and it will not be readable by the standard file system. Carefully label it as a Forth disk. For two-drive users, an additional modification needs to be made. Type 180 DISK_HI ! so Forth will recognize your second drive.

Now choose a screen number (6-89 for single drive users, 90-179 for dual). I suggest 20 for single-drive; 90 for double. This will be where you enter the Forth-83 code. For example, if you choose 20, type 20 CLEAR 20 EDIT and you'll be ready to enter the first screen of code. 20 CLEAR fills screen #20 with spaces and 20 EDIT

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allows you to edit it. To exit the editor press FCTN-9 and you'll be back in Forth. Enter the second screen next using something like 21 CLEAR 21 EDIT. Continue to do this until you've finished with all of them. When you're done (or if only typing part of it in and want to finish later) type FLUSH. This forces the system to write the buffer contents to disk so your work is "saved."

Since the compatibility screens are so long, half of them appear in this issue and the other portion will appear next month. So, the novice Forth programmers will have time to enter these screens. If you run into trobule, send me a Self-Addressed Stamped Envelope (SASE) in care of *Computer Shopper* with a complete description of the problem(s) you are having with booting Forth. The SASE is required—after all, the advice is free! I'll have time to get back to you before the second half appears in print.

Next month I'll have the second portion of the Forth-83 compatibility screens as well as some more information on Forth-83 for intermediate users. Why did I call this column a Tour de Forth? Besides the obvious pun, how many other languages can completely change of their dialects with under 4K of code? ●

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                                                    /Inner Limits/Davis/6


SCR #300
  0 ( Forth-83 conversion code compiled and written  16Jan87 GED
  1 Forth-83 Compatibility code version 1.00 )
  2 BASE->R  DECIMAL 74  R->BASE   CLOAD  ;CODE
  3
  4 ( The definitions will give a standard TI Forth system the
  5 characteristics of a Forth-83 system.  All Standard words
  6 are present [some are re-defined FIG-Forth words] as well as:
  7
  8 1:  Double-number extension word set
  9 2:  Controlled-reference word subset
 10       [ DUMP, EDITOR, K, and OCTAL are missing.  TI Forth
 11       has electives for the first two.]
 12
 13 I extend my thanks to Henry Laxen and Michael Perry for putting
 14 their implementation of Forth-83, F83, into the public domain.
 15 As identified, some words herein are theirs--Glenn Davis) -->

SCR #301
  0 ( Double number word set CODE definitions        01Jan87 GED)
  1 BASE->R HEX
  2 CODE 2! ( 32b addr -- )   C039 , CC39 , C439 , 045F ,
  3 CODE 2@ ( addr -- 32b) C019 , C070 , C650 , 649 , C641 , 45F ,
  4 CODE 2DROP  ( 32b -- )   8E79 , 045F ,
  5 CODE 2DUP   ( 32b -- 32b 32b )   0229 , -4 , CA69 , 6 , 2 ,
  6       C669 , 4 , 045F ,
  7 CODE 2OVER  ( 32b1 32b2 -- 32b1 32b2 32b1 )  0229 , -4 ,
  8       CA69 , A , 2 , C669 , 8 , 045F ,
  9 CODE 2SWAP  ( 32b1 32b2 -- 32b2  32b1 )   C029 , 2 , C059 ,
 10       C669 , 4 , CA69 , 6 , 2 , CA40 , 6 , CA41 , 4 , 045F ,
 11 CODE 2ROT   ( 32b1 32b2 32b3 -- 32b2 32b3 32b1 )   C029 , A ,
 12       C069 , 8 , C089 , 0222 , 6 , C892 , 4 ,
 13       0642 , 8242 , 16FB , CA40 , 2 , C641 , 045F ,
 14 0 CONSTANT FALSE  -1 CONSTANT TRUE
 15 R->BASE -->

SCR #302
  0 ( Forth-83 comparison operators                  07Jan87 GED)
  1 BASE->R HEX
  2 CODE CMOVE>   ( src dest cnt -- )   C079 , C0B9 , C0F9 ,
  3    C041 , 1308 , A0C1 , A081 , 0581 , D493 , 0603 , 0602 ,
  4    0601 , 16FB , 045F , 0704 , 0116 , 0913 , 045F ,
  5 CODE NOT   ( 16b1 -- 16b2 | one's complement )  0559 , 45F ,
  6 CODE NEGATE   ( n1 -- n2 | two's complement )   0519 , 45F ,
  7 : >         ( n1 n2 -- ? )  > NEGATE ;
  8 : =         ( w1 w2 -- ? )  = NEGATE ;
  9 : <         ( n1 n2 -- ? )  < NEGATE ;
 10 : 0<        ( n -- ? )   0<  NEGATE ;
 11 : 0=        ( w -- ? )   0=  NEGATE ;
 12 : 0>        ( n -- ? )   0 > ;
 13 : 0<>       ( w -- ? )   0=  NOT ;
 14 : U<        ( w1 w2 -- ? )   U< NEGATE ;
 15 : <>        ( w1 w2 -- ? )   = NOT ;          R->BASE -->

                                                    /Inner Limits/Davis/7


SCR #303
  0 ( Double number word set                                    )
  1 : CREATE   ( -- ) <BUILDS  DOES> ;
  2 : 2CONSTANT  ( 32b 2CONSTANT cccc )   CREATE , , DOES> 2@ ;
  3 0. 2CONSTANT 0.
  4 : 2VARIABLE  ( 2VARIABLE cccc )   CREATE 0. , ,  DOES> ;
  5 : DNEGATE   ( d1 -- d2 | two's complement )  DMINUS ;
  6 : ?DNEGATE  ( d1 n -- d2 )   D+- ;
  7 : D-   ( wd1 wd2 -- wd3 )   DNEGATE  D+ ;
  8 : D0=  ( wd -- ? )   OR 0= ;
  9 : D=   ( wd1 wd2 -- ? )   D- D0= ;
 10 : DU<  ( ud1 ud2 -- ? )   ROT SWAP  2DUP U<  IF 2DROP 2DROP
 11          ELSE  = IF  U<  ELSE  2DROP 0  ENDIF  ENDIF ;
 12 : D<   ( d1 d2 -- ? )   D- SWAP DROP 0< ;
 13 : D>   ( d1 d2 -- ? )   2SWAP  D< ;
 14 : 2/   ( n1 -- n2 | divides  n1 by 2 )   1 SRA ;
 15 : 2*   ( n1 -- n2 | multiplies n1 by 2 )   1 SLA ;  -->

SCR #304
  0 ( Double number word set cont'                              )
  1 BASE->R HEX
  2 : DMAX  ( d1 d2 -- dmax )   2OVER 2OVER  D- SWAP DROP 0<
  3          IF  2SWAP  ENDIF 2DROP ;
  4 : DMIN  ( d1 d2 -- dmin ) 2OVER 2OVER  2SWAP D-  SWAP
  5    DROP 0< IF  2SWAP  ENDIF  2DROP ;
  6 : S>D    ( n -- d )   S->D ;
  7 CODE D2/  ( d1 -- d2 | divide d by 2   04Jan87  GED )
  8    C079 , C0B9 , 0912 , 0811 , 1702 , 0262 , 8000 ,
  9    0649 , C642 , 0649 , C641 , 045F ,
 10 CODE D2*  ( d1 -- d2 | multiply d by 2   04Jan87  GED )
 11    C079 , C0B9 , 0A11 , 0A12 , 1701 , 0581 , 0649 ,
 12    C642 , 0649 , C641 , 045F ,
 13 : ON     ( addr -- | set addr to true )   TRUE SWAP !  ;
 14 : OFF    ( addr -- | set addr to false )  FALSE SWAP ! ;
 15 R->BASE -->

                                                    /Inner Limits/Davis/8


SCR #305
  0 ( Forth-83 stack manipulators                    18Jun87 GED)
  1 BASE->R HEX
  2 CODE NIP ( w1 w2 -- w2 )   C679 , 045F ,  ( 01Jan87 GED )
  3 : TUCK   ( w1 w2 -- w2 w1 w2 )  SWAP  OVER ;
  4 CODE DEPTH ( n1 ... nk --- n1 ... nk k | 01Jan87 GED )
  5    C060 , 3988 , 6049 , 0811 , 0649 , C641 , 045F ,
  6 CODE PICK   ( nm ... n1 n0 k -- nm ... n1 n0 nk | 01Jan87 GED )
  7    C0B9 , A12 , A089 , C052 , 0649 , C641 , 045F ,
  8 : R@     ( -- 16b )   R>  R SWAP  >R  ;
  9 : ROLL  ( nk .. n1 n0 n -- weird, similar to SHAKE and RATTLE )
 10   >R R@  PICK  SP@ DUP 2+  R> 1+ 2* CMOVE> DROP ; ( 11Oct83HHL)
 11 : ?DUP   ( 16b -- 16b 16b | 0 -- 0 )   -DUP ;
 12 : ?NEGATE  ( n1 n2 -- n3 | apply sign of n2 to n1 as n3 ) +- ;
 13 : -ROT   ( n1 n2 n3 -- n3 n1 n2 )  ROT ROT ;
 14 : WORD   ( -- addr )   WORD HERE ;
 15 : FILL   OVER  IF FILL ELSE 2DROP DROP THEN ;    . R->BASE -->

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SCR #306
  0 ( Forth-83 extensions to TI Forth                           )
  1 BASE->R DECIMAL
  2 : MOVE   ( addr1 addr2 byte-cnt -- | 04Oct83 HHL )
  3    -ROT  2DUP U<  IF ROT CMOVE>   ELSE  ROT  CMOVE  THEN ;
  4 : '      ( interpret: -- comp-addr |  ' <name>  )
  5    -FIND 0=  0 ?ERROR  DROP  CFA ;
  6 : [']   ( compiling: -- comp-addr | ['] <name> )
  7    ' ( tick)  [COMPILE] LITERAL ;  IMMEDIATE
  8 CODE EXIT   ( tick)  ' ;S @  ( tick) ' EXIT !
  9 : >IN   ( -- addr )   IN ;
 10 : ASCII    ( ASCII char | --- n )   BL WORD  1+ C@
 11    STATE @  IF  [COMPILE] LITERAL THEN  ; IMMEDIATE
 12 : CONTROL  ( CONTROL char | --- n-32 )  BL WORD  1+ C@
 13    31 AND  STATE @  IF  [COMPILE] LITERAL THEN  ; IMMEDIATE
 14 : BLANK  ( addr cnt -- )  BL FILL ;
 15 : ERASE  ( addr cnt -- )  0  FILL ;              R->BASE -->

SCR #307
  0 ( Forth-83 extensions to TI Forth                04Jan86 GED )
  1 BASE->R HEX
  2 : VARIABLE  ( compiling: VARIABLE cccc  exec: ( -- addr )
  3    CREATE   0 , DOES> ;
  4 : SIGN  ( n -- )  0< IF  ASCII - HOLD THEN ;
  5 CODE SKIP   ( addr len char -- addr' len' | 04Jan86 GED )
  6    C079 , 06C1 , C0F9 , 1309 , C139 , 0603 , 1302 , 9074 ,
  7    13FC , 0583 , 0604 , 0649 , C644 , 0649 , C643 , 045F ,
  8    0704 , 0116 , 0913 , 045F ,
  9 CODE SCAN   ( addr len char -- addr' len' | 04Jan86 GED )
 10    C079 , 06C1 , C0F9 , 1309 , C139 , 0603 , 1302 , 9074 ,
 11    16FC , 0583 , 0604 , 0649 , C644 , 0649 , C643 , 045F ,
 12    0704 , 0116 , 0913 , 045F ,
 13 : TIB   ( -- addr )   TIB @ ;
 14 VARIABLE (TIB)  ( #characters in TIB )
 15 R->BASE -->

SCR #308
  0 ( Forth-83 interpretive extensions               02Apr84 map )
  1 BASE->R DECIMAL
  2
  3 : #TIB   ( -- addr | stores cnt in (TIB)
  4    TIB 80 SCAN  NIP NEGATE  80 +  (TIB) !  (TIB) ;
  5 : /STRING   ( addr len n -- addr' len ' | 02Apr84map )
  6    OVER MIN  ROT OVER + -ROT - ;
  7 : PLACE   ( str-addr len to-addr -- | 02Apr84 map )
  8    DUP 2OVER ROT  1+ SWAP  MOVE  C!  DROP ;
  9 : SOURCE   ( -- addr len | 02Apr84 map )
 10    BLK @ ?DUP IF  BLOCK B/BUF  ELSE  TIB  #TIB @  THEN ;
 11 : PARSE   ( char -- addr len  02Apr84 map modified 05Jan87 GED)
 12    >R   SOURCE >IN @ /STRING  OVER SWAP R> SCAN
 13    >R OVER -  DUP R>  0<>  -  1+  >IN +! ;
 14
 15 R->BASE -->

                                                    /Inner Limits/Davis/9


SCR #309
  0 ( Forth-83 string extensions                     07Mar84 map)
  1 BASE->R DECIMAL
  2
  3 : .(  ( type text up to delimiting paren at compile-time )
  4    ASCII )  PARSE  TYPE ;  IMMEDIATE
  5 : (   ( -- )  ASCII )  PARSE 2DROP ; IMMEDIATE
  6 : \   >IN @  C/L / 1+  C/L *  >IN ! ; IMMEDIATE
  7 : \S  ( -- )   BLK @ IF  B/BUF  ELSE  #TIB @  THEN  >IN ! ;
  8 : (")   ( -- addr cnt | return addr, cnt of inline string )
  9    R> COUNT  2DUP  +  =CELLS >R ;
 10 : (.")  ( -- )   R> COUNT  2DUP  +  =CELLS >R  TYPE ;
 11 : (LIT")   ( -- addr )   R> DUP  COUNT +  =CELLS  >R ;
 12 : STRING   ( c -- )   WORD C@  1+ =CELLS ALLOT ;
 13
 14 R->BASE -->
 15
```