Christmas

Let us not forget the *real* reasons for these holidays...
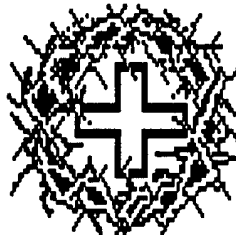
Thanksgiving

~~1993~~

In this issue...

Christmas Shopping List

4th Annual Atlanta CoCoFest Report

OS-9 User's Group Constitution

CONTENTS

OS-9/OSK Answers will return in the next issue, Joel was busy at the Atlanta 'Fest (Glenside booth) and with college. Reviews and OS9 In Industry will also be featured in the December issue.

The editor speaks...   *F.G. Swygert*

There should be over 200 copies of this issue sent out. The last issue saw almost 200, missing it by just 20 subscriptions. This is very good news for me! The original goal of 200 by the first of 1994 was apparently a very good estimate! And this with no advertising outside the community! Look for an ad to appear in such magazines as Computer Shopper next. I think it is about time we started trying to bring some of the delinquent users into the fold...

There were a few problems in the last issue. The one that stands out most is the Disk BASIC listings, especially on VTO. It seems I used a font that the Macintosh didn't like. By the time this was discovered, it was to late to correct. Once I purchase my own laser printer, this problem will be corrected permanently. Although laser printer prices are down around $500-$600, this is not the final cost for a fully functional printer! The low cost printers are fine for text only applications, but need much more than the 512K-1MB of memory to print graphics. 2MB is the minimum requirement. The printer has to build the image in RAM before it is committed to paper. If you intend to use a laser for text printing, by all means go ahead and get one! ASCII text files come out fast on even the basic models.

After the first of the year I will have enough subscriptions to maintain mailing third class. This will put the magazine into definite profitability. Mailing first class as now costs 75 cents per issue versus 23.5 cents via third class. It will mean that you get your magazine a couple days later than usual, but it will also mean that there will be a magazine to receive for some time now! Current pricing and costs puts us barely above the break even point (which was planned from the start). Thanks for the support! Those with four issue subscriptions may want to consider renewing now (several already have, thanks!), as the December issue may be your last otherwise.

News of the Burke & Burke Rocket project will be found in "MicroNews". In short, the project was cancelled due to lack of interest. I placed my order... did you? How many were interested but took the "wait and see" approach? That is the best way to kill any project. Burke & Burke is not a "Johnny come lately", they are a respected vendor and have been in the CoCo market for quite some time. In other words, they have proven trustworthy. The only other way to get an inexpensive OS-9/68000 system will be to purchase a PT68K2 board for and build your own. This would run around $850 (including $300 for OS-9 itself) using surplus parts. Maybe we'll run a detailed article on doing just that later.

I find myself chastising possible buyers above, but Burke & Burke must share some responsibility also. I heard reports that they were difficult to get in touch with. In following this up, I have to say that it has been true. I wrote B&B at least twice concerning the Rocket and getting a copy of their 512K SCSI drivers for review in a later issue. No response. I called and left messages on their answering machine three times, even inviting him to call collect- still no response. Someone suggested electronic mail and gave me an Internet address, so I left mail both there AND on Delphi (which Chris visits very infrequently). I still received no response. All this occurred over at least a thirty day period. I got a letter in the mail 07 October stating that the Rocket would not be made, so he's still out there! Note also that B&B posted two messages on the Internet and Delphi during this time.

I realize how expensive it can be to return phone calls, I run a business also. I understand it may be a week before a response can be made, then a few days for mail to go through, but there isn't much excuse to totally ignore requests without at least posting a notice explaining why mail can't be answered in a timely manner. That almost ruined "OS-9 Underground" magazine about a year ago...

< *268'm* >

Letters to the Editor

Dear Mr. Swygert,

I would just like to say thank you for taking the time to answer my letter. I have some information for you! I dialed 203-259-7713 which is the old Colorware number and to my surprise someone answered "Alpha Products, may I help you?" I asked if they had CoCoMax II and Max-10 and they said they did even though they don't advertise anymore. I was able to get them both for $49.95 +S&H. Their address hasn't changed, it is still 303 Linwood Avenue, Fairfield, CT 06430.

Sincerely,
Jay Duke
11642 S. Pines Trail
Roscommon, MI 48653-9703

Thanks for passing along this info, Jay! If anyone else knows of a vendor still selling but no longer advertising, please let us know!

Mr. Swygert,

In step six of your article "Repackaging the CoCo" (Sept. 15, page 21), you're throwing out WHAT!? Put another way, how much for your old KayProII motherboard? I feel that the KayPro will make a better terminal for my CD68x20 than a VIC-20 (from Commodore). And if worse comes to worse, spare parts.

Mike Neary
429 Washington Street
Spring City, PA 19475-1935

Mike, I quote myself: "Unless you know someone interested in the motherboard, it can be discarded." I found a home for mine, but if anyone out there has a KayPro board they don't intend to use, please contact Mike. I just can't see OS-9/68K coming up on a 36 column Commodore screen!

Dear Frank,

Thanks for your recent letter postmarked 20 September. Once I got past a (error #) 244/243 problem which was media related, Patch_OS9 worked just fine. I am really looking forward to swapping out the old commands for their replacements, as suggested in the documentation. I did load the Basic09 stuff too.

I also played around with putting my C compiler executables in CMDS, and then attempted to LOAD them, to find that for some reason the C.OPT either wouldn't or couldn't load. Incorrect header under Ident. Any ideas on this? The other executables seemed to work fine out of RAM, using /r0.

As I said in the last hasty handwritten note

to you, I believe you have a real winner in the world of 68' micros. I especially like the heavy duty front and back covers, which remind me of academic journals. My fear is that you may burn yourself out like a moth in a flame with your overabundance of energy and ideas. I am planning to support as many of your advertisers as I can (with money), and have mentioned 268'm liberally.

There are often emotional links between these machines and their owner/operators. Links which survive easy logic, or superficial cost/benefit analysis. Thanks for the support.

Henry O. Harwell
2110 West Roma Avenue
Phoenix, AZ 85015-4445

I have no idea what the "C" compiler problems are, as I'm not real familiar with C. If anyone can help Henry, please pass the information along.

Henry works in an Arizona prison with troubled youths. He says that working with the several CoCos the prison got from Tandy some years ago really helps these kids. They do everything from programming to using them with a MIDI keyboard.

Henry bought a subscription, and we then donated a disk subscription to the prison. Any educational concern can contact FARNA Systems and get a similar deal. I'll send a free four issue subscription to any educational institution (sorry, clubs don't count!) using the CoCo and a free microdisk subscription to any that subscribe to the magazine for a year.

We can also help arrange for some FREE CoCo 2s. Sorry, but we don't have any free disk drives or controllers! Shipping costs will have to be paid by the receiving institution, and donation receipts will be required. Contact FARNA Systems for more details on institution letterhead.
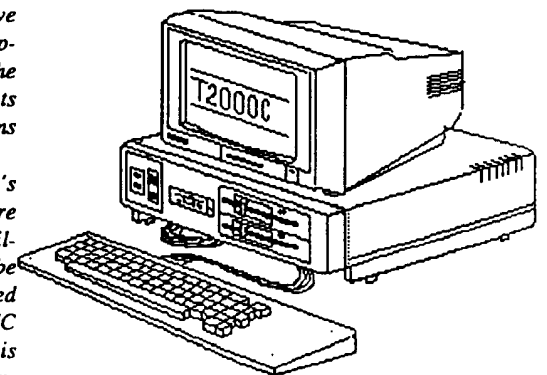
What good are CoCo2s to today's schools? The basic computer concepts are the same for ALL computers. So a familiarization/basic concept course can be taught with these, freeing more advanced machines for like students. The BASIC programming language of the CoCo is compatible with GW-BASIC (IBM compatibles) for the most part, with the screen location commands being the only major difference. This makes the CoCo a great beginning BASIC machine. Add disk drives and OS-9, even Level I, and the basic principles of UNIX can be taught at a bargain price. Someone will, however, have to be responsible for initial setup and instructor training.

Francis,

I FINALLY had time to give both issues of "the world of 68' micros" a CAREFUL read. And I am GENUINELY VERY IMPRESSED... with the magazine overall AND, PARTICULARLY, with YOUR writing in it. VERY VERY impressed. I'll go into more detail later, but wanted to convey THAT right now. Am also especially impressed with Rick Ulland's columns on OS9. UNUSUALLY lucid... put Dale Puckett's stuff to SHAME! Rainbow should have had such writing... there might have been more OS9 users if it had. *I* actually began to think about taking another look at OS9, though I'd already sold all my copies of it off.

Dr. Marty Goodman
martygoodman@delphi.com

Praise from THE CoCo Guru! I must say that Rick and I BOTH are very pleased with this praise from Marty, who is known (at least among Delphi CoCo SIG users) for his attention to detail. I'm sure I'll get a very thoruogh critique later, but that's exactly what I want! I can't improve the magazine if no one points out what they believe to be faults or areas in need of improvement. I do think I got the program listings more readable this time though! Note that the emphasized text (capitals) in Marty's letter is his own! The only editing was the "correct" capitalization for the mag title and a couple typos the spell checker coughed on. Man! I'm tickled pink over this one!!

A Christmas Shopping List

A list prepared especially for CoCo, OS-9, and OS-9/68000 users!

THE COMPUTER JOURNAL: This small magazine is devoted mainly to Z-80/CP/M machines. So why does it appear in this list? They also support other obsolete systems and have great hardware projects using 68xx series microcontrollers and processors. Recently, a project involved building a multi-processor system using the 6809 (see "MicroNews"). My suggestion is to order a sample copy for $4 and look over the back issue listing. Published bi-monthly. $24/year US; $32 Canada; $44 Overseas Air. P.O. Box 535, Lincoln, CA 95648 (916-645-1670). E-mail B.Kibler@genie.geis.com

CRUTCHFIELD : *X-10 Home Automation serial computer interface.* Software for OS-9 available from Delphi (BASIC09). #009CP290P; $49.95+$3 S&H; 1-800-955-3000.1 Crutchfield Park, Charlottesville, VA 22906.

🎄 PERIPHERAL TECHNOLOGY: *PT68K Motherboards.* Assemble an inexpensive OS-9/6800 system using the PT68K2 motherboard! Comes with 1MB, 10MHz 68000 processor. Use inexpensive PC components to complete your system! K2 motherboard - $99 (used, tested, guaranteed), K4 motherboard (16MHz)- $299, Professional OS-9 (with C-compiler)- $299. 404-973-2156; 1480 Terrel Mill Road #870, Marietta, GA 30067

🎄 C. DEKKER: See the ad in this issue! Chris Dekker is offering a 20% discount on any two, 40% on any three of his OS-9 Level II products! The author has used CoCoTop and it is FANTASTIC! If you would like to have an easy to use interface for OS-9, then this is definitely for you! I'll be setting it up later on my hard drive system.

SBUG: Andre LaVelle of the South Bay Users Group (SBUG) may have just the item your CoCo needs! He has a supply of Deluxe Joysticks, OS-9 Level II, and 512K upgrade boards. Call/write for pricing. 1251 W. Sepulveda Blvd. #400, Torrance, CA 90502-2677 (310-539-9702 after 7pm PST)

DISTO: Isn't it time you upgraded your memory? And what about a hard drive? 2MB upgrades for the CoCo are perfect for OS-9! The Extended ADOS 3 RAMdisks will function in memory over 512K also, allowing RAMdisk use with 512K programs. Requires two 1MB x 8 SIMMS (three chip type). $99.95. If you have a SCII disk controller (still available for $130) then a 4in1 board (RTC, parallel, serial, SCSI, $100) or HDII (SCSI, serial, $75) is just the thing for a compact hard drive system. Just add a drive and power supply! 1710 Depatie, St. Laurent, Quebec H4L 4A8, CANADA (514-747-4851). Add $4.50 S&H for one item, $6.50 for two or more.

NORTHERN EXPOSURE: Who says you can't use standard PC type SCSI drives with your OS-9 Level II system? Order Matt Thompson's 512 byte SCSI driver for $25. Remember the games by Oblique Triad? THEY'RE BACK! Darn Marbles- $32, Overlord- $29. Speed up OS-9 Level II with NitrOS9 and a 6309 chip for $49.50 ($34.50 w/o chip). Do you like Breakout in the arcades? Then order Smash! for the sale price of $25. Many more products! PRICES WILL BE HIGHER ON SOME ITEMS AFTER CHRISTMAS! 7 Greensboro Cres, Ottawa, ON K1T 1W6, CANADA

🎄 FARNA SYSTEMS: *Tandy's Little Wonder, The Color Computer,* F.G. Swygert 140 page book covers CoCo history, repairs, upgrade, modifications, peripherals, much more! $20 + $2.50 S&H (normal price is $25 +$2.50!). Don't forget that a subscription to *"the world of 68' micros"* is an excellent gift for a friend or family member with a CoCo. And a renewal for yourself isn't a bad idea either! Do you like to get software to play with often? The best solution is to get a subscription to *"microdisk"* to go along with "68' micros". *Microdisk* is only $40 per year or $6 per issue. If you started your subscription after the August issue was out, order your back issues before 15 December for only $3 each, including S&H! FARNA also carries software, including the *NEW* DigiScan sound digitizer which allows you to record sound on disk and easily play back within your programs ($20). Box 321, Warner Robins, GA 31099 (912-328-7859)

HARD DRIVES: Some people have a hard time finding SCSI drives that will work with Disto and Ken-Ton drivers. These drivers require drives which support 256 byte sectors, most PC and Mac type SCSI drives only support 512 byte sectors. *If you have a PC/Mac type drive, order the 512 byte SCSI drivers from Northern Xposure (left) or Burke & Burke. Alternately, get a Seagate "N" series drive (which supports a variety of sector sizes, including 256 and 512 bytes).* Having a hard time finding one? Contact Winchester Service (4545 Industrial St. Unit 6Em Simi Valley, CA 93063; 805-584-6409) for the following: ST125N (20MB) - $100; ST138N (30MB) - $120; ST157N (40MB) - $140. These are refurbished, but with a SEVEN MONTH warranty! *If you have a Burke & Burke CoCoXT adapter, specify the same number and price, just drop the "N" at the end.* Eight bit WDXTGEN compatible controllers and cables are also available, inquire. Not big enough? Contact Hi-Tech (320 N. Nopal St., Santa Barbara, CA 93103; 805-966-5454) for a 65MB ST277N - only $115 (90 day warranty), or a 177MB ST1201N for $279 (90 day warranty).

MENDELSON ELECTRONICS has a variety of odd and end pieces for the hardware tinkerer. This includes compact 101 key AT/XT keyboards for $39 (#220-3209), 84 key for $29 (#220-3211; both work with Puppo adapter and MM/1); full size AT cases (suitable for mounting CoCo and MPI) for $49, XT cases (use a Y cable) for $29 (cases and keyboards suitable for PT68K motherboards); 5.25" 360K floppy drives for $39, 3.5" 720K with 5.25" mounting kits for $49; and external drive cases with power supply (5V and 12V @ 2 amps each) for a single 1/2 height device (hard or floppy drive) for only $29. The drive cases are surplus from the Commodore 64... just take off the sticker so you don't "shame" your CoCo!! Write or call for a catalog with all kinds of surplus goodies. 340 East 1st St., Dayton, OH 45402 (513-461-7168).

The Fourth Annual Atlanta CoCoFest!
Having a grand time in the deep South...

F.G. Swygert

I'm going to start this article with an apology. There is no way I can even begin to mention everyone! Some I will remember because I got to spend more time with them than with others for various reasons, others I didn't get to talk to much, and some will unwittingly be overlooked. If I do overlook someone, please let me know! It was a hectic but grand weekend, and a lot happened in all to short a time.

Atlanta was great this year! There did seem to be a few less people than last year, but overall attendance was very good. With OS-9 commanding a big presence at the 'fests, maybe we should start calling them CoCo/OS-9 Fests. That would definitely be a better description, and may possibly bring in some new people. OS-9 in it's various forms (6809, 68000, and even OS-9000) is usually represented in at least half the displays.

Now I'm a diehard DECB user myself (all my word processing and telecommunications are done with DECB programs, as well as most games I play), but do use OS-9 some also. But most new software for the CoCo is being written under OS-9.

There is a very simple explanation for this. Programmers who write OS-9 programs can easily port them to the more powerful 68000 and even OS-9000 machines at a later date. This means they may be able to make a reasonable amount from their efforts, and the programming skills they learn/hone in the process of writing will be more applicable in the future and the industrial world. I don't blame them.

Since CoCos aren't made any more, the market will inevitably shrink, whereas the OS-9 market has the potential to grow. I also would like to see other "orphan" groups join with us at the same meetings. Maybe the Timex/Sinclair, Adam, and TI/99 groups. I wouldn't want to see the larger groups there overshadowing our beloved CoCo though! It would not only make the 'fest bigger and better for the promoters, it could make it cheaper for vendors and hotel rooms, and there would also be a very interesting exchange of ideas among programmers and vendors, maybe even some porting of programs between machines. I'll get off my soapbox now and continue with this years' Fest news!

First, who all was there:
Adventure Survivors (1)
Color Systems (2)
Northern Exposure (3)
BlackHawk Enterprises (4)
HawkSoft (5)
South Bay Users Group (SBUG) (6)
OS-9 Users Group (7)
FARNA Systems (8)
Glenside CoCo Club (9)
R.C. Smith (10)
Dirt Cheap Software (11)
Daltrug & Daw Training (12)
Al Dages (used items) (13)
Atlanta Computer Society (14)
Delmar Co. (15)
Eugene Adams (CoCo 2s) (16)
Disto (17)
Rick's Computer Enterprises (18)
Neil Brookings (19)
SubEtha Software (20)
Animagic (OS-9 Underground) (21)
Roy Shoaf (used items) (22)
Ken-Ton (23)

I got to visit most of the booths, as I had help from a couple of friends, Vance and Conrad, from Milledgeville. I have to say I wouldn't have sold near as much as I did without their help! Vance is just a natural salesman, as anyone who visited the FARNA Systems booth can readily attest. Their assistance also allowed me to wander the area a bit and give a seminar on a bit of CoCo trivia and where the CoCo is headed in the future.

The Adventure Survivors, L.E. & Nan Padgett, are based in Atlanta and are always at the 'fest. They have become the unofficial welcoming committee for vendors. One will always find them in the hotel lounge early, ready to greet the vendors and offer refreshments. If I ever go to the Atlanta 'fest and they aren't there, I'll be very concerned! They had their display up hawking adventure games and memberships. The Adventure Survivors print a nice little newsletter featuring hints and sometimes complete solutions for nearly all the popular CoCo adventure titles.

I somehow missed **Zack Sessions** of Color Systems, but he did have a booth. He was of course selling his OS-9 software for both the CoCo and OSK systems. Next time around I'll have to make an effort to talk to Zack personally!

A new vendor for the CoCo community is **Northern Exposure. This company is headed by Colin McKay of Ontario.** They have some new titles, but are primarily distributing software from many Canadian authors. **Intelligent Algorithms, Canaware, Gale Force, Radical Electronics, Bob van der Poel,** and several others were represented. By consolidating distribution, the Canadians cut the costs of advertising and reaching across the border to sell to eager American buyers. I wish them well in this new enterprise! **Bob van der Poel and Alan Dekok were there personally,** as well as several others. It was nice seeing them come this far south! One interesting thing did happen while they were visiting Stone Mountain Park with Allen Huffman and crew of Sub-Etha. There is a fantastic laser show in the park in the evenings, and they often have something for the Atlanta Braves. Amidst the cheers, one of the Canadians yelled out that the World Series Pennant would be staying in Canada (remember that the Toronto Blue Jays beat the Braves in the Series last year!). Luckily, the Braves fans within earshot took no particular notice.

David Graham of BlackHawk enterprises was unable to attend personally. He did have a booth and sent informative flyers for attendees to pick up. Maybe next year David will be able to fly out an join us!

No one who has ever seen **Chris Hawkes (HawkSoft)** will forget him. Not only is he usually the tallest person there, he always has a surprise. He is most often seen wearing his lab coat full of CoCoFest and OS-9 buttons, but this year he and his girlfriend (wife? Sorry if I'm mistaken here Chris!) came dressed in next generation Star Trek outfits! Chris had a very nice selection of hard and soft ware available for the CoCo, including his object oriented programming package for Basic09. Object oriented programming means that a picture (icon) represents a program operation. The programmer simply goes to the menu and selects the appropriate icon for what he wishes the program to do. A large amount of the

code can be "written" this way, with few lines entered manually. Programmers can also create icons for their own often used subroutines.

The South Bay Users Group (SBUG) is always well represented at all the CoCoFests by president **Andre LaVelle.** He always has lots of hardware and some software for the CoCo. He is probably the best bet for someone needing a copy of OS-9 Level II for the CoCo, and even has a few Level I packages (good for the m/l assembler for Level II users). This year he had COMTREX printer buffers and some U.S. Robotics 1200 baud external modems. These were old stock items still sealed in the factory containers and very reasonably priced! I even picked up one of each, and some flippy disks, for myself! The 1200 baud modems were selling for only $10, the 128K buffers for $35.

In my own booth (FARNA Systems) the hottest seller was "Tandy's Little Wonder" and back issues of this magazine. I sold a few subscriptions, but was advising people to take a subscription form home and send a check later, just pick up the back issues now. That would give them more funds to buy things that may not be readily available later. I was also representing **Chris Dekker.** He used to sell items through CoCoPRO!!!, but is now marketing on his own. He had a new user interface for OS-9 Level II which is simply amazing! I will be running it on my hard drive from now on. FARNA also had a new sound digitizer (recorder) from Australia that allows any sound to be recorded on disk and later recalled for use in programs or simply for replay. If anyone has or has heard the sounds in "CrossRoad II" (tic-tac-toe from FARNA), then you have heard what this little program can do!

The Glenside CoCo Club returned to Atlanta to sign up new members and sell souvenir items from previous Chicago 'fests. With a membership one would also receive their choice of several Tandy software packages and also a special program disk. Glenside brings down a POS (point of sale) system running with several terminals. This system is designed to keep track of memberships and club sales.

A local Atlanta CoCo "collector" is R.C. Smith. He isn't a regular vendor, but always seems to find his way to the Atlanta 'fest with many used items. He had everything from disk drive systems to printers.

Over at the **Dirt Cheap Software** booth, I had a chance to talk with **Mark Griffith.** He had copies of the latest issue of "**Metamorphosis**", which is the name of the previous "No Name" magazine. Mark is editor of this "rival" magazine, so we politely stayed away from magazine subjects. Mark was showing the prototype of a new **MM/1 accelerator board.** The thing has a special adapter that plugs down into the PLCC socket of the MM/1 processor. Mark stated that the production units were ready to sell, but there was a delay in shipping them to him for the first day of the 'fest (several arrived for Sunday sales). Mark was also selling his software, most notably Info Express by Mark Dickhaus. This telecommunications software for OS-9 and OSK allows automatic downloading of the message bases of most BBS and network systems for later viewing off line. Messages can also be answered off-line and then automatically uploaded later. This reduces on-line time, and therefor charges, immensely.

Daltrug & Daw Training is made up of the Mr. Wordell and Mr. Veal of Texas. They were selling **Planet Engine,** the astronomy mapping software for the CoCo, and their **training tapes.** They have VHS tapes on setting up OS-9 and removing the 6809E from a CoCo. Both are great aids!

Al Dages is a member of the Altanta Computer society also. He has been displaying used hardware at the Atlanta and Chicago 'fests over the last two years. If you need a replacement CoCo 3, he is probably the best source. He had three still in the factory box at this year's 'fest.

Of course the **Atlanta Computer Society** had a booth! They sold souvenir items and were accepting memberships. This year's 'fest T-shirt was interesting. It had depicted a ghost (the CoCo) leaving a grave with an ACS member standing ready to catch it with a net. The caption read "**We will never give up the ghost!**"

Ed Gresick of Delmar Co. was present showing off his new **System V** as well as the **System IV** OSK computer systems. The System V was up and running **G-Windows,** a graphical user interface for OSK machines. This system is the one currently being pushed by the majority of industrial OSK system and software developers. It is very impressive, as is the System 'V with its 68020 processor.

Eugene Adams is another ACS member, but he wasn't selling anything. At his booth he was GIVING AWAY used CoCo 2s! These systems came from area schools who at one time used many of them. The special educational CoCos distributed by Tandy were different from other CoCos in one way- they had composite monitor instead of RF (TV) output. They had to be used with a monitor. Mr. Adams also had a few of those to give away! I had a talk with him and discovered that he has over 200 of these machines in storage! He is willing to give them to educational institutions provided they will pay shipping costs and write a him a donation receipt for tax purposes. Any non-profit educational institution that could use some of these machines should contact FARNA, who will help Mr. Adams distribute them. Unfortunately, no disk controllers, drives, or network controllers are available, though a few copies of OS-9 Level I are.

Tony DiStefano (DISTO) had his own booth in Atlanta this year. He had an assortment of hardware for the CoCo, including the famous **Super Controller II** and new **two megabyte memory upgrade.** Several mini-expansion bus cards were available also. Tony will continue with the CoCo market as long as he has items remaining. If demand for a particular item is high, he may make another small run of it. For now, if you need something Disto makes, you had better get in touch with Tony as soon as you can afford to before everything is sold out.

As a magazine publisher, I always try to get vendors to advertise. I had tried reaching **Sundog** on several occasions, but had heard nothing from them. Now I know why. They reached an agreement with **Rick's Computer Enterprise** for the distribution and sale of their games. Rick was there selling the popular Sundog software for about half the last advertised prices. Sundog is apparently out of the CoCo business, meaning no new games, but at least what they produced is still available through Rick's.

Neil Brookings has an excellent bible program for the MM/1. Text from nine different translations can be displayed or segments printed. The search algorithms

are very fast. He is currently working on a port to Level II. It should be ready for the Chicago 'fest in May 1994.

A representative from **Ken-Ton** was at the show. This was a first for them! They could not sell any systems or components as they were officially "factory representatives", but they did have information on their excellent SCSI hard drive systems and components. Two complete systems were on display.

The **Sub-Etha Software** booth was almost constantly surrounded by activity, if not in front of it then behind it! **Allen Huffman** managed to bring a lot of the usual Sub-Etha products in his little late model Honda Civic DX. This was only possible because of Allen's careful packing of the car. I helped him pack when he left, and I didn't think he would EVER be satisfied that everything was in exactly the right place. We actually packed that thing THREE TIMES before he was satisfied. Either of the three ways it was packed would have been sufficient- everything was in there fine- but Allen had to have it "perfect"! Sub-Etha demonstrated **Write-Right, the first full featured word processor for the MM/1, and a new point and click disk utility Allen wrote called "Towel".** The name probably has something to do with the towel he always carries around with him at the 'fest (a "Hitchhikers Guide to the Universe" icon). **JWT Enterprises** was also represented by Sub-Etha. Back issues of UpTime and Nine-Times, subscription forms, and JWT software was available.

Animagic Productions, who owns Fat Cat Publications, who in turn publishes **"The International OS-9 Underground" magazine,** was represented by Scot Griepentrog. Back issues of the Underground were available as well as subscription forms. One could also buy subscriptions on site.

Roy Shoaf, another local ACS member, had a display featuring all sorts of used hardware for the CoCo. Hardware hackers found many interesting and useful items at Roy's booth. Several very unusual items, like a four drive case which once belonged to a mini-computer, were for sale.

That wraps up a tour of the 'fest vendors. Seminars were given by several CoCo notables on varied subjects (see sidebar). ACS also gave away over $1000
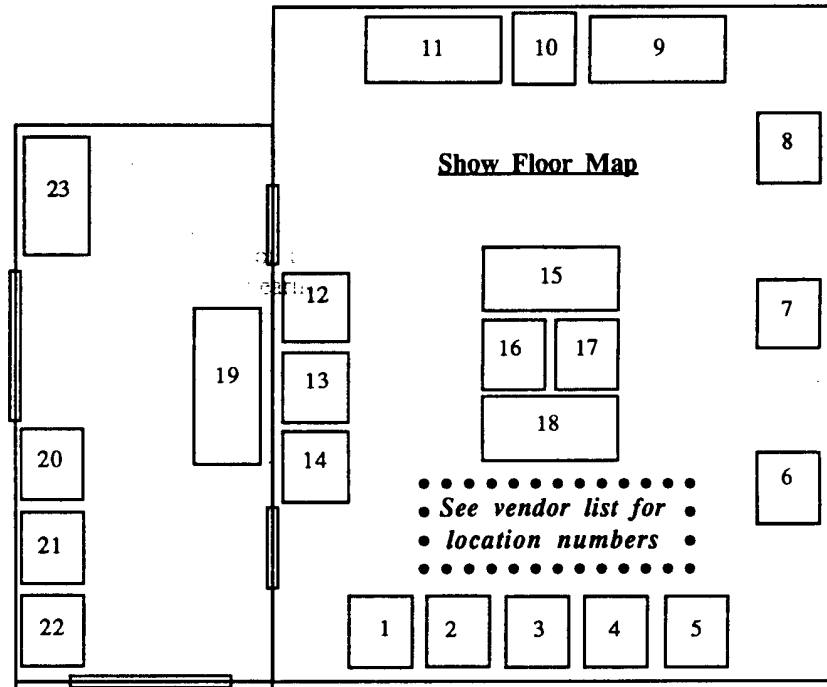
worth of soft and hard ware donated by various vendors, many who were unable to attend (see sidebar).

There is always a lot of camaraderie shown at the 'fests. Many of the same people travel from far away just to attend, and after several one gets to recognize many vendors as well as customers from year to year. If you haven't attended a 'fest, do try to make plans to attend Chicago (which will be held in May 1994) or Atlanta (already being planned for the first weekend of October 1994!). You won't regret it, and will remember the experience for a long time. Even if I didn't have anything to sell, I'd have to make an effort to attend and hopefully stay overnight at the future 'fests. I'd miss all the friends I've come to enjoy seeing at those once or twice a year events.

Show Floor Map

See vendor list for
location numbers

Admission
& Ticket
Sales

To Seminars,
Lounge, & Lobby

The following vendors/persons donated prizes:

Adventure Survivors
Atlanta Computer Society
Canaware
Alan Dages
Wynne Daughters
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Please accept our thanks for supporting the CoCo/OS-9/OSK communities!

Mister Maze! *Kenneth Reighard Jr.*

Guide your marble through a maze populated with holes, but don't fall in!

Mr. Maze is a CoCo 3 game requiring a joystick. It was inspired by those wooden labyrinth games where you guide a marble through a maze avoiding the little holes cut out of the surface. Mr. Maze has one maze built right in to the program, and also allows you to load maze files created with the enclosed editor program. The editor creates mazes using a graphical editor, and also lets you enter maze code, as printed in the magazine (*due to space limitations, the maze editor will be in the next issue*).

A maze consists of these basic things. Walls (red sections) are very neutral. They do you marble no harm, but they do not let you pass through them either. Holes (black circle) are bad. They always love to have you drop in. Your games is over when you fall in a hole.

There are two good things in mazeland, however. Checkpoints (dark blue squares) give you points when you cross them. The finish line (orange block) gives you points, and also the satisfaction of conquering the maze.

You control the marble by "tilting" the maze. The maze is tilted by pointing the joystick in the direction you want the maze tilted. The marble (white dot) will roll that way. The marble has inertia, and will not change directions immediately. Roll the marble over the checkpoints and to the finish line.

Scoring is dependent on each maze. The built in maze awards 100 points for each checkpoint passed, and 200 points for crossing the finish line.

In addition to the built in maze, I have included two maze files. EASY.MAZ is a beginners maze with fewer holes than the built in one. OUTORDER.MAZ has the finish line easy to reach, but all the checkpoints are scattered on different arms of the maze. To load a maze, select LOAD MAZE at the main menu with the joystick. The maze files on the disk will then be listed. Use the arrow keys to select the maze you want, and press [ENTER]. Press [E] to return to the menu.

I hope you enjoy MR. MAZE. Any questions, comments, or suggestions can be sent to me at my school address:

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Toledo, OH 43607
I can also be reached via the internet at:
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1 ' MR. MAZE
2 ' BY KENNETH REIGHARD, JR.
3 ' COPYRIGHT 1993 K. REIGHARD &
FARNA SYSTEMS
5 POKE &HE6C6, 18:POKE &HE6C7, 18
6 POKE65497,0
7 CLEAR 2000
8 CLS:INPUT"MONITOR (R/C)";Q$:IF
Q$="R" THEN MN=-1 ELSE IF Q$="C"
THEN MN=0 ELSE 8
9 CM=0
10 DIM MZ(38,22), FL$(34), CK(7), PT(8)
40 WIDTH 40
55 GOSUB 4700
60 GOSUB 4600
62 IF Q=1 THEN 100
70 GOSUB 4000
90 ' PLAY MAZE
100 HGET(103,71)-(217,121),2
102 HPUT(103,71)-(217,121),1
104 HCOLOR 14:HPRINT(14,11),"Press
button": HPRINT (15,12),"when ready"
106 IF BUTTON(0)=0 THEN 106
108 HPUT(103,71)-(217,121),2
115 X=SX:Y=SY
117 CT=0:SC=0
120 MX=0:MY=0
123 FOR Q=0 TO 7:CK(Q)=0:NEXT Q
125 LP=11
130 TX=(JOYSTK(0)-31)/100
140 TY=(JOYSTK(1)-31)/100
150 MX=MX+TX:MY=MY+TY
152 IF ABS(MX)>3 THEN MX=SGN(MX)*3
154 IF ABS(MY)>3 THEN MY=SGN(MY)*3
160 IF HPOINT(X+MX,Y)=10 THEN MX = -
MX*.4
170 IF HPOINT(X,Y+MY)=10 THEN MY =-
MY*.4
175 IF HPOINT(X+MX,Y+MY)=10 THEN
MX=-MX*.4:MY=-MY*.4
180 HSET(X,Y,LP)
190 X=X+MX:Y=Y+MY
195 LP=HPOINT(X,Y)
200 IF LP<>11 THEN 330
210 HSET(X,Y,14)
220 GOTO 130
330 IF LP<8 THEN IF CK(LP)=0 THEN
CT=CT+1:SOUND
100,1:CK(LP)=1:SC=SC+PT(LP):IF MN
THEN PALETTE LP,9:GOTO 210 ELSE
PALETTE LP,11:GOTO 210
334 IF LP=9 THEN 400
336 IF LP=8 THEN PLAY"L4O4CDEF
G":SC=SC+ PT(8): GOTO 410
340 GOTO 210
400 PLAY"V25":FOR Q=3 TO 1 STEP -
1:PLAY"O=Q;L32BV-AV-GV-FV-EV-DV-
C":NEXTQ
410 HGET(103,71)-(217,121),2
412 HPUT(103,71)-(217,121),1
415 HCOLOR 14:HPRINT(14,9), "Che
ckpoints":HPRINT (15,10),"Reached:
"+STR$(CT)
417 HPRINT(15,11),"Score:"+STR$ (SC)
420 Q=1
422 IF Q=1 THEN HCOLOR 14 ELSE
```

```
HCOLOR 15
425 HPRINT(13,13),"Same maze"
427 IF Q=2 THEN HCOLOR 14 ELSE
HCOLOR 15
430 HPRINT(13,14),"New maze"
432 QQ=JOYSTK(0):QQ=JOYSTK(1)
434 IF QQ<32 THEN Q=1 ELSE Q=2
435 IF BUTTON(0)=1 THEN 442
437 GOTO 422
442 HPUT(103,71)-(217,121),2
444 IF Q=2 THEN 60
447 GOSUB 3100
450 GOTO 100
3000 HCOLOR 10:HLINE(X*8,Y*8)-(X*
8+7,Y*8+7),PSET,BF:RETURN
3010 XX=X*8+2:YY=Y*8:HDRAW"BM
=XX;,=YY;C9G2D3F2R3E2U3H2 L3C2 ":
HPAINT(X*8+4,Y*8+4),9,9:RETURN
3030 HCOLOR C:HLINE(X*8,Y*8)-(X*8
+7,Y*8+7),PSET,BF:RETURN
3040 HCOLOR 8:HLINE(X*8,Y*8)-(X*8
+7,Y*8+7),PSET,BF:RETURN
3099 ' SET COLORS
3100 IF MN THEN FOR Q=0 TO 7: PA
LETTE Q,8:NEXT Q:PALETTE 8,38:
PALETTE 9,0:PALETTE 10,36: PALET TE
11,9:PALETTE 12,18:PALETTE 13,
27:PALETTE 14,63:PALETTE 15,8
3105 IF NOT(MN) THEN FOR Q=0 TO
7:PALETTE Q,9:NEXT Q:PALETTE 8,
38:PALETTE 9,0:PALETTE 10, 7:PAL ETTE
11, 11:PALETTE 12,18:PALET TE 13,
31:PALETTE 14,63:PALETTE 15,9
3110 RETURN
3199 ' RESET COLORS
3200 IF MN THEN RGB ELSE CMP
3220 RETURN
3299 ' SET COLORS TO BLUE
3300 FOR Q=0 TO 15
3310 IF MN THEN PALETTE Q,9 ELSE
PALETTE Q,11
3320 NEXT Q
3330 RETURN
3900 GOSUB 3300:HCOLOR
2,1:HSCREEN 2:HCLS:HLINE(7,7)-(31
2,184),PSET,B:HPAINT(0,0),2,2
3910 HLINE(36,20)-(268,172),PSET,B:
HLINE(38,22)-(266,170),PSET,B
3911 GOSUB 3200
3930 GOSUB3200
3999 GOTO 3999
4000 GOSUB 3300:HCOLOR
10,11:HSCREEN 2:HCLS:HLINE(7,7)-
(312,184),PSET,B:HPAINT(0,0),10,10:
GOSUB 3100
4010 FOR Y=1 TO 22:FOR X=1 TO 38
4020 C=MZ(X,Y)
4030 IF C=10 THEN GOSUB 3000
4032 IF C=9 THEN GOSUB 3010
4034 IF C<8 THEN GOSUB 3030
4036 IF C=8 THEN GOSUB 3040
4038 IF C=12 THEN SX=X*8+4:SY= Y*8+4
4040 NEXT X,Y
4050 RETURN
4099 ' LOAD MAZE
4100 POKE 65496,0
```

```
4102 F=0:ER=0
4103 FOR Q=3 TO 11
4105 DSKI$ 0,17,Q,A$,B$
4110 FOR QQ=1 TO 127 STEP 32
4113 IF MID$(A$,QQ+8,3)="MAZ" AND
MID$(A$,QQ,1)<>CHR$(0) THEN F=F +1:
FL$(F)=MID$(A$,QQ,11)
4114 NEXT QQ
4115 FOR QQ=1 TO 127 STEP 32
4116 IF MID$(B$,QQ+8,3)="MAZ" AND
MID$(B$,QQ,1)<>CHR$(0) THEN F=F
+1:FL$(F)=MID$(B$,QQ,11)
4117 NEXT QQ
4118 NEXT Q
4125 HSCREEN 0:GOSUB 3200:CLS
3:ATTR 3,2
4130 IF F=0 THEN PRINT"    No maze
files on this disk!":SOUND 100,5: FOR Q=1
TO 1000:NEXT Q:ER=1:GO TO 4190
4135 IF F<18 THEN FF=F ELSEFF=17
4137 FOR Q=1 TO FF
4138 LOCATE 2,Q:PRINT LEFT$(FL$
(Q),8)+"."+RIGHT$(FL$(Q),3)
4139 NEXT Q
4140 IF F<18 THEN 4150
4142 FOR Q=1 TO (F-17)
4144 LOCATE 22, Q:PRINT LEFT$
(FL$(Q+17),8)+"."+RIGHT$(FL$(Q+17),3)
4146 NEXT Q
4150 Q=1
4151 LOCATE 4,20:PRINT"Select maze
with the arrow keys.":LOCATE
9,21:PRINT"Press [ENTER] to load.":
LOCATE 6,23:PRINT"Press [E] to return to
menu.";
4152 IF Q>17 THEN QX=22:QY=Q-17
ELSE QX=2:QY=Q
4154 LOCATE QX,QY:ATTR 2,4:PRINT
LEFT$(FL$(Q),8)+"." +RIG HT$(FL$(Q),3);
4156 Q$=INKEY$
4160 IF Q$="" THEN 4156
4161 LOCATE QX,QY:ATTR 3,2:PRINT
LEFT$(FL$(Q),8)+"." +RIG HT$(FL$(Q),3);
4162 IF Q$=CHR$(10) THEN Q=Q+1: IF
Q>F THEN Q=1
4164 IF Q$=CHR$(94) THEN Q=Q-1:IF Q<1
THEN Q=F
4166 IF Q$=CHR$(8) THEN IF F>17 THEN
IF Q>17 THEN Q=Q-17 ELSE Q=Q+17
4167 IF Q$="E" THEN ER=1:GOTO 4190
4168 IF Q$=CHR$(9) THEN IF F>17 THEN
IF Q>17 THEN Q=Q-17 ELSE Q=Q+17
4169 IF Q$=CHR$(13) THEN 4173
4170 GOTO 4152
4173 ATTR 3,2:CLS:LOCATE
9,11:PRINT"Loading: ";LEFT$(FL$ (Q),
8)+"." +RIGHT$(FL$(Q),3)
4175 OPEN "I",#1, LEFT$(FL$(Q) ,8)+
"."+RIGHT$(FL$(Q),3)
4177 FOR Y=1 TO 22:FOR X=1 TO 38
4180 INPUT #1,MZ(X,Y)
4182 NEXT X,Y
4183 FOR Q=0 TO 8:INPUT #1, PT(Q):
NEXT Q
4184 CLOSE #1
4185 CM=1
4190 POKE 65497,0
4191 GOSUB 3100
4192 HSCREEN 2:RETURN
4199 ' READ MAZE
4200 RESTORE:FOR Y=1 TO 22:FOR X=1
```

```
TO 38
4210 READ C:MZ(X,Y)=C
4220 NEXT X,Y
4225 FOR Q=0 TO 8
4227 READ PT(Q)
4228 NEXT Q
4229 CM=1
4230 RETURN
4599 'MAIN MENU
4600 HGET(103,71)-(217,121),2: HPU T
(103,71)-(217,121),1
4602 Q=2
4603 IF Q=1 THEN HCOLOR 14 ELSE
HCOLOR 15
4604 HPRINT(13,10),"Current maze"
4605 IF Q=2 THEN HCOLOR 14 ELSE
HCOLOR 15
4607 HPRINT(13,11),"Built in maze"
4610 IF Q=3 THEN HCOLOR 14 ELSE
HCOLOR 15
4612 HPRINT(13,12),"Load maze"
4615 IF Q=4 THEN HCOLOR 14 ELSE
HCOLOR 15
4617 HPRINT(13,13),"Quit"
4620 QQ=JOYSTK(0):QQ=JOYSTK(1)
4622 IF CM=1 THEN Q=INT(QQ/21)+1
ELSE Q=INT(QQ/31)+2
4628 IF BUTTON(0)=1 THEN 4640
4630 GOTO 4603
4640 IF Q=4 THEN GOSUB
3200:POKE65496,0:CLS:END
4645 IF Q=1 THEN HPUT(103,71)-
(217,121),2:GOTO 4670
4650 HPUT(103,71)-(217,121),1
4655 HCOLOR 14:HPRINT(15,11),"One
Moment"
4660 IF Q=2 THEN GOSUB 4200
4665 IF Q=3 THEN GOSUB 4100
4667 IF ER=1 THEN HPUT(103,71)-
(217,121),2:GOTO 4600
4670 RETURN
4700 HCOLOR 10,11:GOSUB
3300:HSCREEN 2:HCLS:HLINE(7,7)-
(312,184),PSET,B:HPAINT(0,0),10,10:
GOSUB 3100
4705 HLINE(102,71)-(217,121),PSET,B
4710 HBUFF 1,3500:HGET(103,71)-
(217,121),1
4720 HBUFF 2,3500
4739 HCOLOR 14:HPRINT(16,3),"Mr.
Maze":HPRINT(19,19),"by":HPRINT(9,20),
"Kenneth Reighard, Jr."
4750 RETURN
4999 'MAZE DATA
5000 DATA 9,11,11,11,10,11,11,11, 11,
11,11,12,10,11, 11,11,10,9,11,11,11,11, 9,
10, 11,11,11,11,11,11,11,11,9,11,11, 11,
9,10
5010 DATA 10,11,10,11,11,11,10,10,10
,10,10,10,10,11,10,11,10,11,11,11,11,11
,11,10,11,9,10,10,10,10,11,11,9,11,11,11,9,10
5020 DATA 11,11,10,9,10,9,10,11,9,11,
11,10,9,11,10,11,11,9,11,11,10,9,11,10,
11,11,11,11,11,10,11,11,9,11,9,11,9,10
5030 DATA 11,9,10,11,11,11,11,11, 11,
11,11,10 ,11,11,10,11,11,11,11,9,10,11,
11,10,10,10,10,11,11,10,10,11,11,9,11,9,11,9,10
5040 DATA 11,10,9,11,11,11,9,11,10, 10,11
,10,11,9,10,9,10,10, 10,10,10,11,
9,10,11,11,11,11,11,10,11,11,11,11,9,11,9,10
5050 DATA 11,10,10,11,10,9,10,10 ,10,
```

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11,11,10,11,10,10,10,9,10,10,10,10,11,11,
10,11,11,9,9,10,10,10,10,10,10,10,6,10,10
5060 DATA 11,11,9,11,11,11,10,10,10,
11,9,10,11,10,10,10,11,11,11,10,9,10,9,11,
10,11,11,11,11,11,11,11,10,11,9,11,11,11,11,11
5070 DATA 9,11,10,11,10,11,10,10,10 ,
11,11,10,11,11,10,11,10,11,3,11,10,11,11,
10,11,11,11,11,11,11,11,10,11,11,11,11,9,11,11
5080 DATA 10,11,10,9,10,11,10,10,10,
2,10,10,9,11,10,11,10,10,10,11,10,11,9,
10,9,9,9,9,11,11,10,11,10,10,10,10,10,10
5090 DATA 11,11,10,11,11,11,9,10,10,
11,11,11,11,11,10,11,11,10,10,11,11,11,11,10
,11,11,11,11,11,10,11,11,11,11,11,10,8,10
5100 DATA 11,9,10,1,10,10,10,10,10,9,
10,9,10,9,10,9,11,10,10,10,10,9,10,11,11,
11,11,11,11,10,11,11,11,11,10,10,11,9
5110 DATA 0,10,10,11,11,9,10,9,11,11,
11,1 1,11,11,11,11,11,11,10,11,11,5,11,11,
11,10,10,10,10,10,10,11,9,11,11,10,10,9,11
5120 DATA 11,11,9,11,11,11,10 ,11,11 ,10,
10,9,11,10,10,10,10,11,9,10,10,9,10,9,10, 11,
11,11,9,10,11,11,11,11,9,10,10,11,11
5130 DATA 9,11,10,11,11,11,10,11,11,10,9,
11,9,9,9,10,10,10,11,11,11,11,11,11,11, 10,
11,11,10,11,9,11,11,11,10,11,11,11
5140 DATA 11,11,10,11,9,11,10,11,9,10,11,
9,9,9,10,10,10,10,10,9,10,11,10,9,11,9,11,
11,10,11,11,11,11,11,10,11,11,11
5150 DATA 11,10,10,11,11,11,10,1 1,10,10,
9,11,9,10,10,10,9,11,11,11,10,9,10,10,10,10,
9,11,10,10,11,9,11,9,10,11,11,11
5160 DATA 11,11,10,10,11,10,10,11,1 0,11,
10,9,11,11,11,11,11,11,11,11,11,11,11,10,11,
11,10,11,11,10,10,11,11,11,11,10,9,11,9
5170 DATA 9,11,10,10,11,11,10,11,11,11,
11,10,10,10,10,10,11,11,10,10,11,11,9,11,11,
10,11,11,10,11,11,11,11,11,10,11,11,11
5180 DATA 11,11,10,10,11,11,9,9,10,9,11,
10,11,11,11,10,11,11,10,10,10,11, 4,11,11,
10,11,9,10,9,11,11,9,11,10,10,9,11
5190 DATA 11,9,10,9,10,11,10,11,11,11,11,
10,9,11,9,10,11,9,10,10,10,10,9,11,11,11,11,
11,10,11,11,11,11,11,11,11,10,11,11
5200 DATA 11,11,10,11,11,11,10, 11,10,10,
10,10,11,11,11,10,11,11,10,10,10,10,10,10,
11,11,11,11,10,11,9,11,11,9,7,9,11,11
5210 DATA 9,11,11,11,9,11,10,11,11,11,11,
11,11,9,11,11,11,11,10,10,10,10,10,10 ,10,
11,9,11,10,11,11,11,11,10,11,11,11,11
5220 DATA
100,100,100,100,100,100,100,100,200
```

The Hardware Hacker
Dr. Marty Goodman
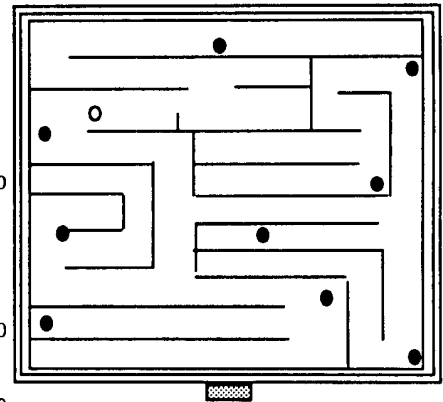
"Stacker" 512K Upgrade... no board required, but lots of tedious soldering!

As I write this article sources for 512K memory upgrade boards for the Coco 3 are disappearing quickly. Tandy may have a few left at National Parts and one or two third party vendors may still have a few, but the time is coming soon when, should you stumble across a 128K CoCo 3 at some flea market, you simply WON'T be able to buy a memory board for it.

Chips for the board are cheap... 41256 120 or 150 ns DRAMs currently are readily available from surplus and salvage chip suppliers for 45 cents each or less, making the cost of the 16 needed memory chips under $15 when you add shipping, handling, tax, phone call, etc. But without a board to plug the chips into that plugs into the CoCo 3's memory board socket, you can't use the chips. Or can you?

Actually, you can. There is a way to upgrade a 128K CoCo 3 to 512K WITHOUT using an add on memory board. There are, however, several obstacles to this upgrade route that you must be aware of BEFORE considering it at all.

This approach requires a high level of skill at fine soldering. It is VERY tedious. It might take a skilled electronic hobbyist two to three hours or more to make up the modules used in this upgrade. If this does not daunt you, read on.

Overview of the Project:

The approach consists of making up four modules that plug into the four existing 18 pin 4464 DRAM sockets. These modules each consist of four 41256 DRAM chips, all soldered PIGGYBACK FOUR CHIPS HIGH. What you are doing, actually, is in effect making a 4 bit wide by 256K DRAM chip that can be is compatible with the 256 cycle refresh used by the GIME chip. Note that it is the failure of Tandy's designers to provide the GIME chip with a 512 cycle refresh that prevents use of the (cheaply and widely available) actual 256K by 4 DRAM chips in a CoCo 3 memory upgrade.

Required Parts and Tools:

You'll need sixteen (better get 18 or so to take care of goofs you make later!) 41256 120 or 150 ns DRAM chips. Be SURE you are getting GOOD CHIPS. If you are using surplus or salvaged chips, it's best to TEST these chips before proceeding, using a DRAM tester or some device that uses 41256 chips. Otherwise, you might wish to buy new, "prime quality" parts. Many serious computer tinkerers

have lots of 41256 chips lying around, actually, scrapped from hopelessly obsolete 8088 and 80286 computers. Faster chips probably will work fine, but frankly if you have a choice, it's best to buy the 120 or 150 ns chips, for some very sublte reasons I don't want to get into here.

You'll also need some sort of 18 pin "header" to mount the bottom chip in the stack (nine pins each side, the CoCo 3 4464 memory chips are 16 pin, eight each side). I've used actual, proper 18 pin component-carrying headers, but I've also found that an 18 pin machine pin style socket (round pins and holes) works just fine as a header.

You'll want to have some very fine wire handy... perferably 30 gauge wire wrap type wire. You'll also need four physically tiny .33 or .47 mfd capacitors. In a pinch .1 mfd pass caps may do, but I don't recommend them. If that's all you can get hold of in a very small size, try putting three of those in parallel when the instructions call for using one .33 or .47 mfd capacitor.

Making a Module:

The following instructions are for making up ONE "DRAM Stack". You'll need to make four such stacks or modules.

Take three 41256 DRAMs and bend straight outward pins 2 and 14. Cut off the thin parts of each of those bent pins, so that you have only the wide, flat part of pins 2 and 14 sticking striaght horizontally out from the side of the chips.

Take a fourth 41256 chip and bend horizontally straight out, then trim ONLY pin 14. Now bend straight UP pin number 1. Cut off the thin part of this pin. Now prepare pin 16 of this chip: Bend pin 16 intially FORWARD so it is sticking straight out from the end of chip, looking like an extention of the long left side of the chip. Then gently bend the thin part of it downward. What you are trying to achieve is making that pin go beyond the end of the chip, skiping one pin spacing, then down again.

Now solder this chip onto the 18 pin header or machine pin socket. Position it so that pins 1 thru 8 of the DRAM chip lie over pins 2 thru 9 of the 18 pin header, and same for pins 9 thru 15 of the DRAM pins on the other side of the chip and pins 10 thru 16 of the header. If you bent pin 16 of the DRAM chip correctly, it will be going straight down onto pin 18 of the header,

arching over pin 17 of the header where it would have gone had you not cleverly bent it as described above. Nothing goes into pins (or holes) 1,2,17, and 15 of the header (machine pin socket). Solder a wire that connects pin 2 of the DRAM chip (which is currently soldered to pin 3 of the header) to pin 14 of that same DRAM chip (pin 14 that you bent horizontally out and trimmed above). You've now connected the bottom of the four chips to the header.

Explanation:

Pin 1 of the 18 pin header NEVER is used. Pin 18 of the header is supplying ground, and that's why the weird bend is made in pin 16 of the DRAM, to connect it to ground. Pins 2,3,15, and 17 of the header are the four DATA lines for the 4464 chip. These eventually end up connected to the data from each one of the DRAM chips.

41256 DRAM chips differ from 4464 and 44256 DRAM chips in that the 41256 chips have separate data in and data out pins (pins 2 and 14). The four bit wide chips supported by the CoCo's socket use a SINGLE pin for data going both in and out. As it happens, proper use of timing on the Write Enable, RAS, and CAS lines of the DRAM chip by the CoCo allows you to just SHORT the data in to the data out pin of each individual 41256 chip, and use that as a bi- directional data line. Thus, we will be connecting pins 2 and 14 of each DRAM chip, AND then connecting those two pins of each chip to one of the four data lines (pins 2,3,15, and 17) of the header. The 41256 chip has an extra address line compared to the 4464 chip normally used in the CoCo. This line (pin 1 of the DRAM) we will keep separate, and later connect to a spot on the CoCo mother board that supplies this added address line.

Directions Continued:

Now that you have mounted the bottom chip on the header, one by one add the remaining three chips you prepared above, piggyback, over the bottom chip. You will find that all pins except pins 2 and 14 of the DRAM chip you add will have to be soldered to the chip below it. After you add each chip, solder a wire between pins 2 and 14 of that chip (the two pins you bent out), then solder another wire connecting those joined pins to pins 2, 15, or 17 of the header (it makes no difference which of those three is used for a given DRAM chip).

Continue until you have stacked all three of the DRAM chips one on the other. Try as you do this to leave as much space as you can between the chips. When you have all four chips stacked on each other, solder a phyusically small .33 or .47 mfd capacitor on top of the stack so that one side of the cap goes to pin 16 and the other side of the cap goes to pin 8 of the top DRAM chip.

Testing the Module:

For TEST PURPOSES ONLY, temporarily solder a jumper to the top of the stack that joins pin 1 of the DRAM chips to pin 16 of the DRAM chips. Now try using this stack to replace a 4464 DRAM chip in a normal CoCo 3, leaving the other three 4464s in place. If the CoCo 3 boots up and works, you've made the module successfully. Individually test each of the four modules this way before proceeding!

Installing this mess:

When you have four tested-as-working modules, plug each one into each of the four DRAM sockets, keeping that test jumper between pins 1 and 16 in place on each of the modules. Make sure the CoCo boots up and works fine. You might want to run a memory test overnight or some such. The jumper between pin 1 and 16 makes the module act as a 64K by 4 chip, just like the four 4464 DRAM chips that originally were in the 128K CoCo 3. The modules should run fairly cool at this point.

With the modules thoroughly checked out as working, proceed to hooking up the extra address line to enable the full 512K. First, REMOVE all four "test jumpers" that you had joining pins 1 and 16 on each module. Then jumper pin 1 of one module to pin one of the next, daisey chain style, so that all the pin 1's on all the DRAM chips are all connected to each other. Note that pin 1 of the bottom DRAM chip in each module does NOT connect to the header below it, as per the instructions for making the module above.

Now locate the spot on the CoCo 3 mother board where you can connect to the A8 line from the GIME. Looking at the CoCo as if you were in front of it ready to type on it, and above it so that you are looking down onto the mother board, locate CN4. This is one of three 12 pin connectors that normally are used to connect to the add-on 512K memory board. It is parallel to and just in back of the connector for the keyboard ribbon cable. Let's call the hole at the extreme right in CN4 "pin 12". Then the hole just to the left of that is pin 11. Just in front of

CN4 and DIRECTLY in front of pin 11 of CN4 is a solder pad attached to a trace that dives under CN4. This pad is connected to the hole for pin 11 of CN4. THIS is the pad where you find the A8 line from the GIME chip. The correct pad is right next to and just to the left of a simlar pad that similarly connects to pin 10 of CN4. Note that the holes in CN4 are NOT numbered on the CoCo motherboard itself. CN4 is labelled clearly (thoughg in very tiny letters) in white silk screen notation on the mother board.

Solder a jumper between the A8 pad described above and the collectively joined pin 1's of the DRAM modules. Finally, remove C65 and C66, the two tiny little RAS and CAS timing caps found just in front of and just behind the four DRAM chip sockets that are now housing your modules.
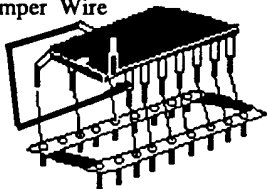
Turn on the CoCo. You should now have a working 512K CoCo 3. Use a quality memory test program (such as RTLONG, available on the Delphi CoCo SIG and this issue's "microdisk") to test memory. Note that MANY memory test programs cannot distinguish between a 128K and 512K CoCo 3. RTLONG CAN. It is one of the few memory test programs around that checks for ghosting or shorted address lines.

Stacked DRAM Module

This is supposed to be representative of one of the modules. Jumpers extend from pin 2 to pin 14 of each individual chip. A jumper is then connected between pins 2 of all three top chips and header pin 2. Pin 1 of the bottom chip IS NOT connected to the header. A jumper attaches all four pins 1 to a spot on the motherboard. All pins 14 of the top three can be jumpered and then to pin 15 or 17 of the header. Top 2/14 jumper goes across chip in the illustration.The small capacitor on top (white spot) connects between pin 8 and 16 of the top DRAM only. Four such stacks are required.

Top Three Chips
For each stack, bend three chips like this: pin 2 and 14 out with little ends trimmed off.
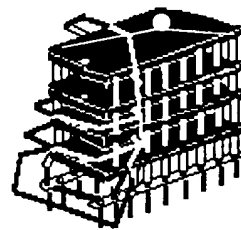

Jumper Wire

Header Chip (Bottom)
The bottom chip of each stack must be prepared in this manner: Bend pin 1 straight up. Bend pin 14 straight out and trim the little end off. Bend pin 16 forward, then the little end down so that it skips pin 17 of the 18 pin socket and goes into pin 18 instead. Solder all pins into the socket. Now piggy back and wire chips per instructions.

The "New" OS-9 Users Group
F.G. Swygert

A new beginning in Atlanta for OS-9 users.

Many of you, especially if you were OS-9 User Group members over the last year or so, know that the group almost fell apart recently. The reason this happened was not because of a single person, but because the group had not had any real goals or organization over the last few years. In fact, the only real "service" provided to members was the periodic publication of a news letter. Even the library had become somewhat dated.

The last president suddenly resigned and attempted to disband the group after only a few months in office. He may have done the group a favor. It took this drastic action to galvanize members into doing something with the group.

The new leadership is devoted to making the group a viable, supportive organization for personal and industrial users alike. All of this was pointed out in the first official meeting of the new group at the Atlanta CoCoFest in October. A new constitution and by-laws were also created. The by-laws will be officially voted on in May 1994 at the Chicago CoCoFest (the next official group meeting). The constitution is fully in effect at this moment.

The new group board of directors consists of a president, executive vice president, and three directors-at-large. The group has been incorporated as a non-profit organization in the state of Iowa. The current board of directors are:

Carl Boll (president)
Colin McKay (executive VP)
Ed Gresick
Mark Griffith
Steven Weller (directors-at-large)

The constitution is the basis for all group activities. The by-laws provide details of how these activities will be carried out. For your information, the constitution is reprinted here with permission of the OS-9 Users Group.

THE CONSTITUTION OF THE OS-9 USERS GROUP, INC.

1. The Organization shall be known as the OS-9 Users Group, Inc., and shall be referred to in this Constitution as "the OS-9 Users Group".

2. The OS-9 Users Group is established as a non-profit, educational, and scientific organization pursuant to the laws of incorporation for non-profit organizations in the state of Iowa and shall be operated in accordance with all regulations and laws governing non-profit corporations in that state.

3. The Purpose of the OS-9 Users Group is: (a) To stimulate and sustain interest in the OS-9 operating system in all its forms, (b) To promote the cooperation and exchange of information concerning OS-9 between its members, (c) To conduct programs and activities which promote fraternalism and advance the general interest and knowledge of its members, (d) To support, where practical, the activities of other organizations which promote OS-9.

4. The corporation is organized exclusively for educational and scientific purposes within the meaning of Section 501 (c)(3) of the Internal Revenue Code of 1954 or the corresponding provision of any subsequent federal internal revenue law. Not withstanding any other provision of these articles, this corporation shall not, except to an insubstantial degree, engage in any activities or excersise any powers that are not in the furtherance of the purposes of this corporation, and the corporation shall not carry on any other activities not permitted to be carried on (a) by a corporation exempt from federal income tax under Section 501 (c)(3) of the Internal Revenue Code of 1954 or the corresponding provision of any subsequent federal internal revenue law, or (b) by a corporation, contributions to which are deductible under Section 170(c)(2) of the Internal Revenue Code of 1954 or the corresponding provision of any subsequent federal internal revenue law.

5. No substantial part of the activities of the corporation shall consist of carrying on propaganda, or otherwise attempting to influence legislation except as provided in Section 501 (h) of the Internal Revenue Code of 1986, and this corporation shall not participate in or intervene in (including publishing or distributing statements) any political campaign on behalf of or in oposition to any candidate for public office.

6. All corporate property is irrevocably dedicated to the purposes set forth above. No part of net earnings of this corporation shall inure to the benefit of any of its directors, officers, or members or to individuals except for cases of reimbursement as set forth in the Bylaws. On the winding up or dissolution of the corporation, after paying or adequately providing for the debts, obligations, and liabilities of the corporation, the remaining assets of the corporation shall be distributed to such organization or organizations organized and operated exclusively for charitable, scientific, literary, or educational purposes which has established its tax-exempt status under Section 501 (c)(3) of the Internal Revenue Code of 1954 or the corresponding provision of any subsequent federal internal revenue law.

7. Where there is any conflict between a provision of this Constitution and any regulation or law now in force or hereafter enacted, then such provision of this Constitution shall be deemed to be invalid to the extent of such conflict.

8. The initial directors may adopt Bylaws for the governance of this corporation. Said Bylaws may be amended as provided therein. This constitution shall be amended as provided in the corporation's Bylaws.

9. The membership of the OS-9 Users Group shall consist of individual, corporate, and honorary members. The qualifications and rights of such members shall be set forth in the Bylaws.

10. The officers of the corporation shall be President, Executive Vice President, Secretary, and such other officers authorized in the Bylaws. Such officers shall be appointed or elected as provided in the Bylaws, and shall have their terms and duties provided in the same.

11. The Board of Directors shall consist of the President, Executive Vice President, and three Directors-At-Large. The Directors-At-Large shall be elected as provided in the Bylaws.

12. The name and address of the corporation's initial agent for service of process is Howard Luckey.

There has been some concern over the support provided by the Users Group. The new group leadership has made it clear that it will focus on OS-9/68000 and OS-9000 more in the the future. This upset many of the long-time CoCo OS-9 users who really established the first OS-9 groups. They rightfully feel there would have been no users group without them.

These concerns initially came from some unofficial statements made by a prominent group member in the OS-9 SIG on Delphi. I am happy to say that the concerns are unfounded. The group WILL focus more on the 68K and Intel platform versions of OS-9, but support for the original 6809 version WILL NOT be dropped or even lessened. A special position has been created to see to 6809 support. The other versions do not have this.

6809 support will continue as long as there are members of the group who desire such support. That is the official stance of the group. Naturally, 6809 support will go down as more 68K/9000 users appear, but for now 68K/9000 support is in addition to 6809 support.

Don't be upset by the previous statement. With the CoCo (the primary 6809 platform for personal OS-9 users) no longer being manufactured, many OS-9 users are turning to 680x0 based machines or OS-9000. Just remember that your membership means you have a voice in the group, and as long as there are enough voices to be heard, support for the CoCo version of OS-9 will continue proportionally to membership.

Memberships in the group are $25 per year for individuals. Dues paid now will be good until January 01, 1995. I am proud to say that FARNA Systems is a supporting member of the OS-9 Users Group, although I use OS-9 (on a CoCo) for no more than 25% of my computing. Make checks payable to "The OS-9 Users Group, Inc." and send to:

The OS-9 Users Group, Inc.
6158 W. 63rd St., Suite 109
Chicago, IL 60638

< 268'm >

PT68K and CDX68X20 Cards

Which PC cards will work in these machines?   *Ed Gresick*

There are currently 2 boards carrying the PT68K designation, the PT68K2 and the PT68K4 (the K4 is used in the Delmar SYSTEM IV). The PT68K2 was available with 8, 10 or 12 MHz clocks (although I had 2 which ran at 16 MHz). The 8-bit expansion bus normally ran at the clock speed. Provisions are included to add wait-states by changing a PAL. Many PT68K2 boards were used with Hercules cards. These cards would not run at the full bus speed so a simple PAL change allowed insertion of wait-states.

The PT68K4 boards used in the SYSTEM IV all run at 16 MHz and the 8-bit expansion bus runs at full CPU clock speed. Wait-states can be inserted if necessary by changing a PAL but none have shipped to date with the 'slowdown' PAL.

The SYSTEM V uses the CD68X20 board manufactured by Computer Design Services. The board was designed by Fred Brown, the designer of the PT68Kx series. Much of the design philosophies used in the earlier boards were carried forward to this board. The board is designed to operate up to 50 MHz but hasn't been tested at that speed yet. This board has 5 16-bit and 2 8-bit slots all capable of running at full speed.

Most of the peripheral cards tested so far work or can be made to work in the respective machine expansion buses. But there are a few, such as the Hercules brand mono card, that simply will not work properly without changing parts or adding wait-states. It is best to avoid these old cards. According to Peripheral Technologies, nearly all other currently manufactured mono and CGA cards will work. The combination mono/CGA color cards will not.

All the VGA cards tested so far work in the expansion slots. A few of the VGA cards have on-board circuitry that will automatically insert wait-states if the card can't handle the data transfer rate. One VGA card manufacturer has jumper pins to insert wait-states on the card if they're necessary. They were necessary with the SYSTEM V.

Special purpose cards that are slow would lose data. The System IV and V boards were made to handle these cards by inserting 'nop' instructions in the driver code to slow down the data transfer rate.

In general, a card that works in one of the boards should work in the other. There will be some cases, however, where a special purpose card that works in a K2 may not work in the faster K4 or CDX68X20 without modifying the drivers. See the 15 September issue for details on using internal modems.

Peripheral Technologies and Delmar Co. provide drivers for Mono, CGA, and VGA video cards. Drivers for some other cards are available from Delmar Co. (inquire). Note that due to low demand drivers are not available for some items.

Cards are not necessary for serial and parallel ports or floppy and hard drives. There is on-board support for four serial and two parallel ports as well as two floppy (360K-1.44M) and two (MFM or IDE) hard drives. A keyboard connector is also provided on the motherboard.

EDITORS NOTE: It is important to note the difference between the PT68K4 and CDX68X20 and the Delmar System IV and System V. The PT68K4 and CDX68X20 are bare motherboards. The System IV and System V are COMPLETE computer systems (drives,case, motherboard, power supply, keyboard, etc.) from Delmar Co. that use these motherboards.

Mr. Ed Gesick is the owner of Delmar Co., distributor of the SYSTEM IV and SYSTEM V computer systems. He has been in the computer industry for a number of years and is a strong advocate and supporter of OS-9. He serves as a director of the OS-9 Users Group.

< 268'm >

CoCo Color Show

James Toth

A "screen saver" program for any CoCo

A few days ago I was watching one of the many Macintosh screensaver programs running. These are colorful, animated, interesting little graphics programs that do little other than give you something to look at when you are not typing at the keyboard. I got to thinking, there should be something like that for the CoCo, and so I wrote one.

There are numerous ways to create colorful, animated, interesting graphics displays. One way is to simulate the motion that a lone pool ball undergoes as it bounces around on a pool table. My fellow physicists would refer to this as a "particle in a box." In this case the "box" is the computer screen itself, and the bouncing "particle" leaves a colored trail behind it. And whenever the particle happens to cross over its colored trail, its color changes. That, essentially, is what the listing COLORSHO.BAS accomplishes, except that it uses two particles instead of just one.

The COLORSHO.BAS listing is packed full of REMarks. They are not essential to the running of the program, and you need not include them when you type the program into your CoCo. However, with the help of the numerous REMarks, it is possible to learn quite a lot about programming by studying the program as you watch the program run.

The meanings of some of the variables in COLORSHO.BAS are as follows: The location of particle 1 on screen is specified by coordinates O1 and D1 — O1 over and D1 down from the top left corner of the screen. O2 and D2 do the same for particle 2, and they are set by the program itself. A1 and A2 are the memory addresses that correspond to locations (O1,D1) and (O2,D2) on the screen. The X and Y values are added onto the O and D values to calculate the particles' next locations on the screen. To make the particles bounce off of the edges of the screen, the sign of the X and Y values are changed whenever the O and D values exceed 31 and 15 respectively or are less than 0.

If you change the values of O1 and D1 in lines 60 and 70, you can change the starting locations and, to some extent, the patterns traced out by the particles. The legal range of O1 is from 0 to 31, and D1 is from 0 to 15.

COLORSHO.BAS has both its good points and bad points. On the good side, it is simple and should run on any CoCo with at least 16K of memory. On the bad side, it runs too slow to be really pretty or interesting — a drawback of BASIC.

This slowness led to my creating an assembly language version, COLOR- SHO.ASM, which runs considerably faster when as-

sembled to machine language. It too should run on any CoCo with at least 16K of memory.

If you have an assembler, you can type in and assemble the COLORSHO.ASM listing to get a more interesting machine language version of the program. If you don't have an assembler, then you can type in and run the BASIC program listing titled MAKESHO.BAS. MAKESHO.BAS also creates a machine language version of the program which you can EXECute by typing and entering EXEC16017. Pressing any key will stop it.

Whether you use an assembler or not, I suspect that you will find it interesting to study the COLORSHO.ASM listing and compare it to the COLORSHO.BAS listing. The two programs do essentially the same things, one in BASIC and the other in assembly language. Also, the BASIC and assembly language listings share virtually identical REMarks. By carefully comparing the two, you can come to see what is involved in carrying out a line of BASIC code.

Once you have a machine language version of the program in your CoCo's memory, you can change certain things about it by POKEing numbers into memory addresses 16000, 16001, and 16002 before you EXECute the program. The starting location of the particles is controlled by 16000 and 16001, similar to O1 and D1 in the BASIC version. And since the machine language version can run remarkably fast, the speed can be controlled by the contents of address 16002. If you POKE in numbers that are out of bounds, then the program should refuse to EXECute. The legal ranges of the POKEing numbers are as follows:

ADDRESS:	CONTENTS:
16000	0 to 31
16001	0 to 15
16002	0 to 255 (0 is fastest)

I hope you find this set of programs to be fun, pretty, and educational. They won't turn your CoCo into a Macintosh, but then, a CoCo doesn't need to be.

James Toth
R.D.4, Box 230
Punxsutawney, PA 15767

BASIC Listing:
```
2 REM **COLOR SHOW
4 REM (c) JAMES TOTH & FARNA , 1993
10REM *** INITIALIZE VARIABLES ***
20 X1=1
30 X2=1
40 Y1=-1
50 Y2=-1
60 O1=1
70 D1=7
80 IFO1>31ORO1<0THENEND
90 IFD1>15ORD1<0THENEND
100 O2=32-O1:IFO2>31THENO2=0
110 D2=15-D1
120 REM *** CLEAR SCREEN ***
130 CLS0
140 REM ** ADDRESS OF PARTICLE 1 **
150 A1=1024+O1+32*D1
160 REM ** ADDRESS OF PARTICLE 2 **
170 A2=1024+O2+32*D2
180 REM *** GET COLOR FOR 1 ***
190 C=PEEK(A1):IFC<143THENC=143:GO
TO 230
200 IFC>254THENC=128:GOTO230
210 C=C+16
220REM *** SHOW PARTICLE 1 ***
230 POKEA1,C
240 REM *** GET COLOR FOR 2 ***
250 C=PEEK(A2):IFC<143THENC=143:GO
TO290
260 IFC>254THENC=128:GOTO290
270 C=C+16
280REM *** SHOW PARTICLE 2 ***
290 POKEA2,C
300 REM * UPDATE COORDINATES OF 1*
310 O1=O1+X1
320 IFO1>31ORO1<0THENX1=-X1:O1=O1
+2*X1
330 D1=D1+Y1
340 IFD1>15ORD1<0THENY1=-Y1:D1=D1
+2*Y1
350 REM * UPDATE COORDINATES OF 2*
360 O2=O2+X2
370 IFO2>31ORO2<0THENX2=-X2:O2=O2
+2*X2
380 D2=D2+Y2
390 IFD2>15ORD2<0THENY2=-Y2:D2=D2
+2*Y2
400 REM *** STOP ON KEYPRESS ***
410IFINKEY$=""THEN150
420 END
```

BASIC M/L Loader Listing:
```
2 REM **MAKE SHOW
4 REM (c) JAMES TOTH & FARNA, 1993
10 CLS:PRINT"ONE MOMENT...":PRINT
20 CLEAR200,15999
30 FORA=16000TO16346
40READX
50 POKEA,X
60T=T+X
70NEXTA
80 IFT<>38138THENPRINT"THERE IS AN
ERROR IN THE DATA!":END
90 PRINT"TYPE AND ENTER THE
FOLLOWING:"
100 PRINT"EXEC16017"
110 DATA1,7,5,0,206,0,255,0,255,0,255, 0,
255,0, 255
120 DATA0,255,134,1,183,62,131,183,62,
132, 64, 183, 62, 133,183
130 DATA62,134,182,62,128,129,31,16,34,
1,49,183, 62,135,182
140 DATA62,129,129,15,16,34,1,37,183,62,
```

137, 182, 62,135,64
150 DATA139,32,129,31,35,1,79,183,62,
136, 182, 62, 137,64,139
160 DATA15,183,62,138,134,128,142,4,0,
167, 128,140,6,0,38
170 DATA249,142,4,0,191,62,143,182, 62,
135,198,1,61,243,62
180 DATA143,253,62,143,182,62,137,198,
32,61, 243,62,143,253,62
190 DATA139,142,4,0,191,62,143,182, 62,
136,198,1,61,243,62
200 DATA143,253,62,143,182,62,138,198,
32,61, 243,62,143,253,62
210 DATA141,166,159,62,139,129,143,36,4,
134,143,32,10,129,254
220 DATA35,4,134,128,32,2,139,16,167,
159,62,139,166,159,62
230 DATA141,129,143,36,4,134,143,32,10,
129,254,35,4,134,128
240 DATA32,2,139,16,167,159,62,141,182 ,
62,135,187,62,131,183
250 DATA62,135,129,31,35,16,246,62,131,
80,247,62,131,251,62
260 DATA131,251,62,135,247,62,135,182 ,
62,137,187,62,133,183,62
270 DATA137,129,15,35,16,246,62,133 ,80,
247,62,133,251,62,133
280 DATA251,62,137,247,62,137,182,62,
136, 187, 62,132,183,62,136
290 DATA129,31,35,16,246,62,132,80,247,
62, 132,251,62,132,251
300 DATA62,136,247,62,136,182,62,138,
187,62,134,183,62,138,129
310 DATA15,35,16,246,62,134,80,247,62,
134,251,62,134,251,62
320 DATA138,247,62,138,182,62,130, 198,
31,61,16,131,0,0,39
330 DATA5,131,0,1,32,245,173,159,160,0,
129,0,16,39,255
340 DATA1,57

COLORSHO.ASM AssemblerLlisting for
Color Show. Remarks are indented.

| 00100 | ORG | 16000 |
| 00110 | ORIGO | FCB | $01 |

MEMORY FOR VARIABLES

00120	ORIGD	FCB	$07
00130	TIME	FCB	$05
00140	X1	RMB	1
00150	X2	RMB	1
00160	Y1	RMB	1
00170	Y2	RMB	1
00180	O1	RMB	1
00190	O2	RMB	1
00200	D1	RMB	1
00210	D2	RMB	1
00220	A1	RMB	2
00230	A2	RMB	2
00240	STUFF	RMB	2
00250	START	LDA	#1

INITIALIZE VARIABLES

00260		STA	X1
00270		STA	X2
00280		NEGA	
00290		STA	Y1
00300		STA	Y2
00310		LDA	ORIGO
00320		CMPA	#31
00330		LBHI	FINIS
00340		STA	O1

00350		LDA	ORIGD
00360		CMPA	#15
00370		LBHI	FINIS
00380		STA	D1
00390		LDA	O1
00400		NEGA	
00410		ADDA	#32
00420		CMPA	#31
00430		BLS	J1
00440		CLRA	
00450	J1	STA	O2
00460		LDA	D1
00470		NEGA	
00480		ADDA	#15
00490		STA	D2
00500		LDA	#128

CLEAR SCREEN

00510		LDX	#1024
00520	CLS	STA	,X+
00530		CMPX	#1536
00540		BNE	CLS
00550	AGAIN	LDX	#1024

ADDRESS OF PARTICLE 1

00560		STX	STUFF
00570		LDA	O1
00580		LDB	#1
00590		MUL	
00600		ADDD	STUFF
00610		STD	STUFF
00620		LDA	D1
00630		LDB	#32
00640		MUL	
00650		ADDD	STUFF
00660		STD	A1
00670		LDX	#1024

ADDRESS OF PARTICLE 2

00680		STX	STUFF
00690		LDA	O2
00700		LDB	#1
00710		MUL	
00720		ADDD	STUFF
00730		STD	STUFF
00740		LDA	D2
00750		LDB	#32
00760		MUL	
00770		ADDD	STUFF
00780		STD	A2
00790		LDA	[A1]

GET COLOR FOR 1

00800		CMPA	#143
00810		BHS	J2
00820		LDA	#143
00830		BRA	POKE1
00840	J2	CMPA	#254
00850		BLS	J3
00860		LDA	#128
00870		BRA	POKE1
00880	J3	ADDA	#16
00890	POKE1	STA	[A1]

SHOW PARTICLE 1

| 00900 | | LDA | [A2] |

GET COLOR FOR 2

00910		CMPA	#143
00920		BHS	J4
00930		LDA	#143
00940		BRA	POKE2
00950	J4	CMPA	#254
00960		BLS	J5
00970		LDA	#128
00980		BRA	POKE2
00990	J5	ADDA	#16

| 01000 | POKE2 | STA | [A2] |

SHOW PARTICLE 2

| 01010 | | LDA | O1 |

UPDATE COORDINATES OF 1

01020		ADDA	X1
01030		STA	O1
01040		CMPA	#31
01050		BLS	J6
01060		LDB	X1
01070		NEGB	
01080		STB	X1
01090		ADDB	X1
01100		ADDB	O1
01110		STB	O1
01120	J6	LDA	D1
01130		ADDA	Y1
01140		STA	D1
01150		CMPA	#15
01160		BLS	J7
01170		LDB	Y1
01180		NEGB	
01190		STB	Y1
01200		ADDB	Y1
01210		ADDB	D1
01220		STB	D1
01230	J7	LDA	O2

UPDATE COORDINATES OF 2

01240		ADDA	X2
01250		STA	O2
01260		CMPA	#31
01270		BLS	J8
01280		LDB	X2
01290		NEGB	
01300		STB	X2
01310		ADDB	X2
01320		ADDB	O2
01330		STB	O2
01340	J8	LDA	D2
01350		ADDA	Y2
01360		STA	D2
01370		CMPA	#15
01380		BLS	J9
01390		LDB	Y2
01400		NEGB	
01410		STB	Y2
01420		ADDB	Y2
01430		ADDB	D2
01440		STB	D2
01450	J9	LDA	TIME

SPEED CONTROL

01460		LDB	#31
01470		MUL	
01480	WAIT	CMPD	#0
01490		BEQ	ABORT
01500		SUBD	#1
01510		BRA	WAIT
01520	ABORT	JSR	[$A000]

STOP ON KEYPRESS

01530		CMPA	#0
01540		LBEQ	AGAIN
01550	FINIS	RTS	
01560		END	START

< 268m >

Beginning With OS-9

NOTE: Though based on CoCo OS-9, this column is good for OS-9/68000 beginners also!

Rick Ulland

How the OS-9 Shell works and using Tandy's utilities.

On our way to the command line, lets review what we are up against. Under OS9, you don't command the machine. It's running along quite well, thank you. What you can command is a process- which grants you some Ram (64K limit on CoCo) and some i/o paths. But a process is still a theoretical thing. You can't see it, except as a dead window.

Shell is OS9's command line interpreter, and you can see it, as your friendly local OS9 prompt. When you type a line here, shell proceeds to rip it apart, and feed the pieces on as it sees fit. Besides it's power to censor everything you say, shell is also used to control the underlying process. They are tied so closely together many exchange the two terms. That being said, I'm going to do it!

A shell can be attached to any suitable device, for instance a window or serial port. In this case stdin,stdout,and stderr are connected to that device, and it looks for all the world like a separate computer- accepting user input,acting on it, and reporting it's results- all to/from this device. Redirection can temporarily bend these connections to different devices, or a pipe can connect to a different process.

The problem is, none of this stuff rates one letter of text on the command line, just a few punctuation marks and the space character. So if you only study one thing in your manual, study shell.

The upside to learning the differance between a space and semi-colon (;) is it only needs to be done once. Since shell does all the 'front end' translation, all the OS9 utilities it drives act fairly similar.

Some general rules:

Spaces are used as separators. A leading slash(/) has special meaning, telling shell to start with a physical device. Further slashes subdivide this device.

The first word is the name of a program or utility. Given alone, the program is started without a data file and with no options (This may only result in an error message from the program, hopefully with startup info).

If there are options available, they go next. This area is completely optional and not rigidly defined. Many utilities use a dash (-) to mark an option, but some (including some from MicroWare) use the dash to remove an option.....Time to crack the book. First try -?, which often results in a help file.

Next there is generally a pathlist. It can be assumed (just filename), assigned(/d0/DIR/file), or extended (SUBDIR/file). Note the lack of an opening slash when extending beyond the current data directory (chd). This relates to the any slash is a device rule. Obviously, disk utilities use this spot to identify the first file. Whats not so obvious is many programs will accept a data file path here, and happily load that file from anyplace, despite the current data directory and the fancy runtime menus.

Next slot is usually another pathlist, but there are exceptions. See **rename** (below) for an example exception.

Thats usually plenty for one utility, but shell will keep on passing chunks of stuff separated by spaces as long as it can getaway with it, or a return or seperator pops up.

Gone is Microsofts colon(:). It has three replacements. The first, the semi-colon(;), is a direct replacement for the colon (:).

An ampersand(&) allows concurrent execution with the next process- even if the next process is just your prompt back. So while list mondobigfile>/p ties up a window completely for 15 minutes, list mondobigfile>/p& will only slow it down for 20. This provides OS9 with more than the equal of a MSDOS TSR- any utility can simply be left running by starting it with utility&.

And last, pipe(!) says take all that, and send it over to this completely different thing. See **dsave** (below) for example.

Using Tandy Utilities

Using the above rules as a loose guide, the first things to address are the utilities presented in the Tandy release. I'm going to take a different slant, and present whats mainly a "Why To" column:

Attr About the only 'normal' use for attr is making files downloaded by a BBS executable, at least until your CoCo sprouts a second user. Note manual bug in the 's' option... 'file is not single-user and can serve only one user at a time'? Interesting spin.

Backup For identical drive types only- makes it pretty useless on most OS9 CoCos. See dsave

Build Completely useless. Edit can do this, AND edit.

Chd/Chx So basic they seem to not need comment, but often overlooked- the main difference between DECB, these point to the specific disk, not disk drive.

Cmp Never used it much, but if you have two files and want to know if they are identical, this will tell you.

Cobbler Copies os9 from ram to disk as a bootfile. Real handy for capturing patches done in memory, or quickly reproducing your normal boot on a new system disk, but cobbler has a big gotcha. Patches cannot be easily extracted from a cobblered boot, so if one ever rebuilds from scratch, they can be easily lost.

Config A real piece of.....software (Apologies to Al), config pretends to be easy to use while actually making things harder. It is usually used only once to get a bootable disk halfway setup.

Copy Main problem is it barfs if the destination filename already exists- this can be aggravating. It's important to note copy is not limited to disk files- it's a good way to transfer data between any devices with no added encoding. (Unlike list, which adds linefeeds). Try copy textfile /p.

Date Not to much on a stock CoCo, but date t is handy if you own a realtime clock.

Dcheck Tells you more than you will ever want to know about a disk (similar to MS-DOS chkdsk). Some disk fixers actually use this utilitiesoutput. Important to note that ANY boot disk will report some clusters in allocation map but not file structure (the boot track isn't a file). The opposite (in structure but not map) is cause to dsave then destroy the disk in question.

Deldir Should have been named chainsaw. Deldir removes everything from where it's set at to the end of that directory branch. At first, always type "l" when it asks list,delete,quit?

Dir This stock directory lister is actually pretty useful, but there are many replacements, usually under the Unix name of ls.

Display If familiar with BASIC, this commands underlying function will be old news- it's a chr$ command. Here it accepts hex numbers and sends that code to the redirectable path stdout. So, display 41 prints an A on screen. Ho-humm... BUT, if you look in the windows section of the manual, all window commands are just a series of hex codes! Take a look at the first 'general command' in the windows section of your OS9 manual, BColor. Os9 doesn't recognize this

name, but it sure understands display 1b 33! Just add one more number (for the palette slot) to get a complete command. Add arrowsto send it elsewhere, if needed... so display 1b 33 01 >/w7 sets the background color of window seven to palette one.

Dsave Gets a bum rap from the poor documentation supplied. DSave can be used to copy all or part of a directory structure to another directory structure. If that sounds pretty vague, it is! There is only one limit, both parties must have directories- nothing else matters.

Stone slow, but dsave uses no part of the original disks directories or structure, instead recreating it from scratch using copy and makdir. Good for damaged disks or mismatched backups.

As the manual states, dsave doesn't exactly do anything. Instead it sends copy and makdir commands to that wonderful place stdout. The manual says redirect this into a file, and the book goes on about this file at length, and I am sure having this file available to edit is handy at times. However, not all of us want the dang file! Instead, we connect dsave to shell with a pipe, like this: Chd to the directory to start copying from. For a whole disk, just chd /dx. Remember all the directories in this directory (ad infinitum) will be copied as well unless you specify "-l". Parameters for the dsave command are first the DEVICE the above directory is on, then a pathlist(device and directories) to the destination. Last we add the pipe to a shell, and get

Dsave /d0 /d1 ! shell

The list of commands will appear onscreen as they are sent to shell for execution. Errors are skipped over, so duplicate files or already existing directories don't bring everything to a halt. This is a really handy thing to happen when merging disks together.

Echo Designed to post simple update messages while a script is running. Before you try it, formatting text by adding leading spaces doesn't work. You can use display to send window codes, then echo to send text string.

Edit Definately not a contestant for worlds best editor, but it's small and will run anyplace- even in a single line window. It has the advantage of being almost exactly like the interactive editor Basic09 has, which is the only way I can remember how to use it. Keep it in RAM for quick fixes. Makes a temp file called SCRATCH, so if anything blows up check for it.

Ex Allows running a procedure without an underlying shell. Nice to have for tiny or

overstuffed machines, but if the new procedure doesn't stop gracefully you get one dead screen.

Format A lot nicer than I expected, can handle not only floppies but hard disks and RAM disks as well. Uses a massive chunk of system RAM so fat boots bulge here first.

Free Stock version is often replaced with one that reports bytes free rather than largest block. Rolls over every 16Megs or so, so what you see aint always what you get on hard disks.

Help Sounds like a good idea, but it's slow and on floppy systems uses precious disk space. Many utilities duplicate this infomation internally anyway. Try typing format with no options or parameters for an example of a built in help file. Third party utils also use internal help. Try -? as option.

Ident When comparing two executable files, this command is invaluable. Identical CRC generally mean identical files. Since many patches don't change version # in header, swapping CRC info is commonplace. Cmp is similar, but compares byte for byte... means little for executable files.

Iniz Alternative to starting a device during boot.

Kill A good way to get rid of a runaway process. The only bad part is getting the id number from procs- the stock procs isn't as helpful as it could be.

Link If one runs a program simply by typing its name, it disappears as soon as its completed or you quit. To prevent this, catch a handy shell prompt and link program.

It looks like I'd better chop this roughly in half. Here's half! Next month is (drum roll) the other half.

OS9> ■

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More Christmas Shopping!
Continued from page 4

WORLDCOMM: *Stan Veit's History of the Personal Computer,* by Stan Veit. Do any of you remember when Stan Veit owned Computer Shopper magazine? This book is a compilation of his articles about pioneer computer manufacturers, including SWTPC (Frank Hogg cut his OS-9 teeth on one of those!), IMSAI, Altair, Ohio Scientific, and more! Excellent reading for ANY computer buff! $27.95 hardback, $19.95 softback. Add $3 S&H. 1-800-472-0438; 65 Macedonia Road, Alexander, NC 28701

COCO TRADER: For $3 you will receive a six month subscription to a newsletter listing CoCo items for sale or trade from CoCoist all over the country. Send in your 1/8 page ad (about five lines x 36 characters each) before December 15 and your ad is FREE or two ads for $2. no dealers please. Send checks or money orders to: Jim Sternett, 3000 Woddland Hills Dr. Apt 14, Ann Arbor, MI 48108. Phone 313-677-2418 after 5 PM EST.

TAB/McGRAW HILL: *Books!*
Trouble Shooting and Repairing Personal Computers, 2nd Edition, by Art Margolis The first edition, printed in 1983, was based on a CoCo 1. This version is primarily based on IBM clones, but has information on 8 bit models (including CoCo) and 68xxx based computers (Amiga, Atari ST, Mac). Lots of generic information. #3677H, $34.95+$4.75 S&H
Microcontrollers: Architecture, Implementation, & Programming, by K. Hintz & D. Tabak. Covers Intel 8051, Motorola 68HC11. #028977-8, $48 +$4.75 S&H; 1-800-822-8158; Blue Ridge Summit, PA 17294-0840. *Ask for Electronics Book Catalog!*

RICK'S COMPUTER ENTERPRISE: Remember all that neat stuff CoCoPRO! used to sell? Well, a lot of it is available from Rick's! This includes the Simply Better word processor and VTerm terminal programs for under $20 each (write/call for current price). Rick's recently got the rights to sell Sundog games also. They are now $12-$18 each, or all 18 for $180! And don't forget about *"CoCo Friends Disk Magazine"* for only $30 per year (bi monthly)... now available in hard copy! P.O. Box 276, Liberty, KY 42539 (606-787-5783)

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Telecom   *Allen Huffman & David Graham*

Acessing Internet Files from GEnie, New OS-9/OSK uploads on Delphi

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Rub the Lamp (GEnie) *Allen Huffman*
Update & More Internet Talk

As more and more online services start gaining "neutral" connectivity through the Internet, the advantages of being an Internet subscriber increases. For instance, last issue we took a look at how you can easily use Internet mail gateways to send messages to users all around the world, whether they subscribed to your particular service or not. It goes even further than this. There is also many programs and files "out there" awaiting your discovery. While the GEnie Color Computer and OS-9 Software Libraries currently contain over 600 files, there exists a wealth of other files on the Internet, all searchable and obtainable to GEnie subscribers.

The first step is to go to the Internet RoundTable on GEnie. Typing "M1405" or the keyword "INTERNET-RT" at any GEnie menu prompt will take you to a menu with the following options:

```
GEnie      INTERNET-RT      Page 1405
           Internet RoundTable
```

1. Internet Bulletin Board
message base to discuss the Internet
2. Internet Conference Room
chat with other GEnie members
3. Internet Library of Files
files requested from the Internet
4. About the Internet RoundTable   ...
5. RoundTable News (930504)   ...
6. Send Mail to RoundTable Staff
Feedback to the Internet SysOps
7. Internet Mail
easy access to private Internet mail
8. Download Sysop's Treat File   ...
9. Unix RoundTable
easy access to the Unix area
10. Search the Internet for a file
see below
11. Request a file from the Internet
see below
12. What is my Internet Address
lists your GEnie Internet ID

Enter #, <P>revious, or <H>elp?

Option 10 allows you to search the vast Internet domain for a particular file. GEnie will ask you what you want to find:
Please enter the filename to search for:
:cocofest4.txt
you type in the filename:
Please enter one-line description of the file:

:report of 1992 atlanta CoCoFest
and what the file is.

GEnie then asks, for demographic purposes, what type of computer you are using. Unfortunately, CoCos fit in the "Other" category. When done, you are asked if you are ready to send the request, then informed that the results of the search will come back to you via GEnie mail as a message. To actually get something from the Internet (either a file or directory listing) use option 11. GEnie will ask for the following:
> Site name upon which the file is located.
> Directory on the site in which the file is located.
> File name of the file.
> Your computer type for demographics

You are asked if you want to get a directory or file, then you are asked to specify the complete Internet "path" to the site that holds it. (Such as cabrales.wusc.edu, where many CoCo and OS-9 files reside.) If asking for a directory, two display options are allowed (brief or full) and it will even offer to compress the directory in ZIP, ARC, or LZH. A file request will end up in the Software Libraries of this section for you to download at normal GEnie connect rates.

That's all there is to it! Friendly people are always around to help you in your searches and you would be amazed at what a search for "os9" reveals. Experiment and you might be surprised by what all you find.

Next time, we'll go back to other topics of interest to GEnie Color Computer and OS-9 users. Until then, enjoy!

For more information on GEnie, dial 1-800-638-9636 (voice) to talk to client services. You may also dial 1-800-638-8369 with your modem (settings 8 bits, no parity, 1 stop bit, half duplex). Upon CONNECTion, type "HHH" then at the "U#=" prompt type "XTX99188,TANDY" to begin the signup procedure. Have checking account or credit card information ready. Signup fee is $8.95 for the first month which includes three hours of non-prime usage with additional hours billed at $3 each. Extra charges apply for remote access lines, as well as Canadian, prime time, 9600 baud or toll free access.

On-Line Currents (Delphi) *David Graham*

Welcome back, to Online Currents. This month, we'll cover online postings on Delphi for the months of August and September. It's been a busy few weeks, and we're pleased to see the OS9 Online databases

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filling so rapidly. Things will slow down for a short while here in October, as the Database Manager is experienceing some hard drive problems, but you can expect to see some significant addtions to the OSK program in this months article.

Files uploaded this month include:
NITROS9 V1.15 UPGRADE Upgrades previous versions of NitrOS9 to v 1.15
SNDMSTR 2.0: SOUND MASTER IN C SoundMaster 2.0 - The final version by JML.
INDIPWB: PROGRAMMERS WORK BENCH A front end for any language: Look for an OSK version from BlackHawk Enterprises!
C_PREP V1.8 ANSI C PREPROCESSOR A fully ANSI compatible preprocessor for the OS9 Level 2 C compiler!
DEVSYS 2.2: MENU DRIVEN DEV. SYS A front end for MW C compiler that should also work with MW Pascal and MW RMA assembler....
BASH 1.12: GNU SHELL FOR OSK This is the BASH shell from the Free Software Foundation for OSK. The top level HELP screen covers a page and a half. Greatly increases the UNIX compatibility of your OSK system for minimal cost!!!
HRECPLAY2: SOUND DIGITIZER/ PLAYER Shareware version of Stephen Seneker's sound digitizer, editor, and player with utilities. A must have from FarSide Systems!
SUPERHEX - ADVENTURE FRAMEWORK The framework for a game based on a hex field. Released to Public Domain by JMLSoft, as they leave the CoCo programming market.
GAMBIT - GAME BOARD EDITOR A game board editor for arcade style games. Use to produce your graphics. Allows inclusion of background tiles, and sprites created with the IMAGE 2.5 sprite editor.
IMAGE 2.5: SPRITE EDITOR See Gambit!
SAN DIEGO SHOW REPORT A report of Steve Carvilles participation in the San Diego Computer Fair.
GHOSTSCRIPT 2.6.1: GNU TEXT FORMMATER The latest version of GNU's Postscript interpreter!
BTIME: TIME SINCE LAST BOOT Just what it says, for OSK and OS9000 systems
RMA6309: PATCH RMA FOR 6309 Patch the MW are assembler to use 6309 commands.
LHA V2.11B: LHA FOR OS-9/6809 LHA archiver: uses -LH1- as it's primary compressor, but understands all 3 levels of archive headers!
UNZIP 4.5B TO 4.5C PATCH

BACKAR E3: HARD DRIVE BACKUP 6309 specific backup util for CoCo 3 with 6309 and patches.
ATLANTA ATTENDANCE PLAN BlackHawk Enterprises press release.
PROCMON: UPDATING PROCS DISPLAY Simple util for the MM/1 : runs procs over and over....
GZIP 1.2.2 FOR OSK GNU's file compression util. NOT an archiver.
CIRCADD: SCHEMATIC DRAWING Demo version of a schematic drawing program for the MM/1
ZIP 1.0: INFO-ZIP FOR OSK PKZip 1.1 compatible tool for OSK.
ATP 1.40: GNU OFFLINE QWK READER This is a must have! Works with RiBBS, and on MS-Dos boards when used with LHA archiver Another great piece of GNU software!
DVIPS 5.495B FOR OSK Convert tex DVI files to PostScript for printing with PS compatible printers, or GhostScript!
MFORMAT: SUPPORTS LARGE CLUSTERS OS9 Level 2 format command to allow multiple sector clusters.
OS9LIB UPDATE Updates to allow compilation of the TOPS OS9.L UNIX compatibility library on a 68000 machine.
TILES 1.0: MAHJONGG FOR KWINDOWS PD Demo of a forthcoming program that uses IBM standard tile files. At $15 this one is a steal!
DISASM: DISASSEMBLER FOR OSK
TASK MONITOR FOR K-WINDOWS
MOD 10 PACK Miscellaneous sound files!
PALM 1.2B: UUCP MAIL READER OS9 Level 2 UUCP mail reader, based on Rick Adams UUCP. Beta version.
BEZIER CURVES FOR G-WINDOWS
SMASH: GAME DEMO BY ALAN DEKOK Demo version of program that went on sale at the Atlanta CoCoFest - a 6809 arcade game.
SEAGATE HARD DRIVE INFO
ULTIMUSE UM3 PLAY PATCH FOR 6309
RZ/SZ: ZMODEM FOR OSK - REV. 2
ADQWK V3.2A: OFFLINE MAIL READER
ANSIFRONT VERSION 0.6 Latest version of Vaughn Cato's approach at ANSI'fying the MW C compiler on the 6809.
BEZIER CURVES RANDOM GRAPHICS
DSET: DISTO CLOCK SETTER
K-WINDOWS FUNCTION KEY UTILS Define macros for the MM/1's function keys.
MOD 6 PACK 6 great sound files!
BEAUTY AND THE BEAST (UME) CLASSICAL MOD FILES Music clips
SUPERDIAL: DIAL DIRECTORY EDITOR A dialing directory editor for SuperComm!
MEGA_WIPEOUT Demo version of the

song Wipeout! This is 1.3 megabytes in length. No system info posted.
HEATGAIN: REFRIGERATION LOAD OSK refrigeration load calculator.
ALLEY CAT (UME)
OSKTAG FOR K-WINDOWS! Finally! A Tagline manager for OSK!
IDIR E#2: INTERUPT DIRECTORY PROG Update of Kevin Darlings interupt directory for the Level 2 OS9/6809
INFOCOM INTERPRETER FOR OSK Interpreter for InfoCom games! Transfer InfoCom games to the MM/1 and run them....
OXYGENE "MOD" MUSIC FILE
DISCUSSION ON BEZIER CURVES An article on what else, Bezier curves.
STG NETWORK BBS V3.0 Shareware release of STGnet BBS. Requires registration for network connection.
VT100 + VT220 ADDITIONS Update of VT100 adding some VT220 commands.
OS9FAQ ED. 8 Version 8 of the OS9 Frequently Asked Question list maintained by Russell E. Huffman II.
RSMENU 1.0: "RSDOS" MENU I Menu for the RSDOS file transfer command
TR3: SEARCH/REPLACE 3 BYTE SEQ.
MERGE EDITION 5 More OSK-like version of the 6809 Merge command.
OS9LIB.L: UNIX COMPATIBILITY LIB TOPs UNIX compatibility lib. Includes ANSI compatible header files for GCC.
UNPROTO — CONVERT ANSI C TO K&R Unported C code for a program that will remove ANSI prototypes from C sources.
UMUSE3 6309/MULTIVUE PATCHES
STAR WARS ADVENTURE What else? A Star Wars adventure game, in Basic09 for the CoCo 3.

For information on how to sign up for Delphi services, call Customer Services at 1-800-695-4005. You can also dial in by modem at 1-800-695-4002. At the PASSWORD prompt type in INFO. Internet users can get info by sending mail to INFO@Delphi.com.

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Programming in "C"

P.J. Ponzo

Strings n' things

When we declare **char x;** we tell the C compiler that x is a character variable (so we may define x='Z'; for example). But what if we wish to assign to x the string: 'hello' ? In order to identify a string (as opposed to a single character) we write: x="hello"; using the double quote and we tell printf() to print x using a string format, %s:

```
main() {
char x;          declare char x; as usual
x="hello";          use "" to define x
printf("string x is %s",x);          use
%s to printf a string
}
```

The above program (when compiled and run) prints:
```
string x is hello
hello!
```

This declaration of a string x may NOT be acceptable to your C-compiler! (It has the SAME format as the declaration of a single character variable!) Lesson 6 will explain... patience!

Double Quotes and Strings : Single Quotes and Characters

Consider the following:
```
main() {
char x,y;          x, y both character
x="A";          x is in double quotes
y='A';          y is in single quotes
printf("x is %s and y is %s",x,y);
BOTH printed as a %string!
}
```

What do you think will be printed? x is A and y is the x-string is OK... but NOT the y! If x is defined as a string (using the double quotes) and is printed (via printf()) using the %string format, then the printout is OK. BUT if y is defined as a single character (using single quotes) but is printed using the %string format then printf() gets confused (..or maybe it's WE who are confused!). This says something interesting about printf()!

When we tell printf() to print a %string (either x or y) printf() expects the address of the first character of the string. When we ask to printf() a %character it expects the actual character itself.

We normally don't worry about this... just define the variable x as a string (using double quotes) and ask printf() for the %s format and - automatically - the address of x is given to printf() and printing begins with the first character found at that address and continues until the last character (...and how does printf() know when it has reached the last character ?? ... patience ...).

If we define y using single quotes and use the %c format in printf() that's OK too. The C language looks after giving the actual character to printf() (rather than the address). Let C do it:
```
x="Z";          x is in double quotes
printf("x is %s",x);
x is Z          this is the printout... OK!
```
If %s is used in the printf() statement, and if x is declared and defined as a string, then C will look after giving to printf() the address where x is stored. Now consider:
```
y='Z';          y is in single quotes
printf("y is %c",y);
y is Z          this is the printout... OK!
```
Here y is in single quotes (hence a single character) and the %c tells printf() that the 'value' of y which it receives is to be interpreted as the actual character itself (in this example, the character Z), so a Z is (correctly) printed. Now consider:
```
y='Z';          y is in single quotes
printf("y is %s",y);
y is          this is the printout NOT OK!.
```
NOW y is a single character (Z, in single quotes), but because we asked to have it printed as a %string, printf() goes to the memory address given by the 'value' of y and prints characters on the screen (according to the numbers it finds in memory)! The 'value' given to printf() was used as a pointer instead of the actual character to be printed... and printf() went to some strange address in memory to find the %string to print!!

Even if we do it right and define a string with double quotes and use %s in the printf() format (so the address of the beginning of our string is passed to printf()) then how does printf() know when it has come to the end of our string?? How does a string end?

When we say x="hello"; the C compiler will put the correct 'values' for the characters h, e, l, l, o into memory and add, at the end (after the o) the 'value' 0. It is this 'value' 0 which signals the end of the string!

NOTE: Every character such as a, b, Z, {, etc. has a certain 'value' (or 'number') associated with it. In ASCII (American Standard Code for Information Interchange) the 'value' or 'number' associated with A is 65 (in decimal) and the 'value' or 'number' associated with 0 is 48 (in decimal). Notice that it is NOT the 'number' 0 which is associated with the character 0 but rather the 'number' 48! SO... the 0 which terminates strings cannot be confused with the character 0. After all, the string may, in fact, be defined by: x="10" which will be stored in memory as the two 'numbers' associated with the characters 1 and 0 (namely the two 'numbers' 49 48) followed by the terminating number 0

It is possible to define a string by defining an array of single characters. Although we will talk (later) about arrays, now is an opportune time to talk briefly about such a definition of a string because, in this instance, we must define the last single character in the array as the special terminating character, 0.

Special 0

Just one word about 'string arrays' ...
```
char x[10];
```
defines an array of 10 elements
```
x[0]='A';
```
the first element is the character A
```
x[1]='b';
```
the second element is the character b
```
x[2]='{';
```
the third element is the character {
```
x[3]='\0';
```
the last element is the 'number' 0!!!!
```
printf("the string is %s",x);
```
print the string, up to the 0
...and the printout would be:
```
the string is Ab{
```
But note the strange way we had to define the terminating element so that

C would recognize it as the 'number' 0 and not the 'character' 0... we used \0 inside single quotes in the statement:
x[3]=\0';

Other special characters like \0

In order to define the special character 0 which terminates a string we referred to it as \0. The backslash \ notifies C that the VERY NEXT CHARACTER is to be interpreted in a SPECIAL manner. (We've seen this kind of thing before: % means the NEXT CHARACTER(s) is 'special' in a printf() format.... as in %s).

There are other \character combinations in C. In each case they are used to define a character which cannot (normally) be typed into your text. For example, the statements:

```
char x,y;
x="Z"; y='Z';
printf("x is %s y is %c",x,y);
```
will print:
x is Z y is Z
ZZZZZZZZZZ

Now suppose we wanted to print:x is Z and y is Z on two separate lines! Then we tell printf() to print a 'special' character, \n, meaning a new line:

```
char x,y;
x="Z"; y='Z';
printf("x is %s \n y is %c",x,y);
```
notice the \n!
x is Z   this is the printout,
y is Z   notice the spaces.
\n=newline

SPECIAL\CHARACTERS

We have the following 'special' characters:

\n   new line.
\t   tab character.
\0   0 terminator (NULL character), ASCII 'value' 0.
\b   backspace.
\"   double quote.
\\   backslash character.

What would the following print?

```
int age;
age=100;
printf("\"Sam\" is %d years old\t\ttoday",age);
```

"Sam" is 100 years old today
notice the quotes and the tabs

Other 'format' info you can give to printf()

We've seen the %d (for decimal number printouts) and we've seen %f (for floating point numbers), and %c and %s for characters and strings, but we have also %o (for octal numbers) and %x (for hexadecimal numbers) and %e (numbers exponential format, such as -7.001100E+03). In each case you may qualify the above format instruction with a field width specification, such as:

```
int a=123;printf("%6d",a);
123
float b=123;printf("%6.3f",b);
123.000
char c='1';printf("%6c",c);
1
char d="123";printf("%6s",d);
123
int e=123;printf("%6o",e);
1.230000E+02
int g=123;printf("%6x",g);
7B      in HEXADECIMAL
```
good form .. bad form
bad form?!

You may have noticed, in the compound statement:

```
float b=123;printf("%6.3f",b);
123.000
```
that we declared b to be a float and, at the same time, we defined it to be 123 (as in float b=123;). That's legal. But we also added printf("%6.3f",b); on the same line. That's considered bad form (...but sure convenient if you want to see as much of your program as possible on a 25-line screen!)

Note: for b=123, 6.3f doesn't provide enough field width (if we want 3 decimal places) so printf() expands the field width to 7 (as required to accommodate 123.000).

You will also have noticed that the statement:

```
char d="123";printf("%6s",d);
123
```
right justified the 123 in a field width of 6. You may ask printf() to left-justify the 123 by specifying:

```
char d="123";printf("%-6s",d);
123
```
(Notice the format specification %-6s with - meaning left-justify).

If b="1234567"; then (as expected) printf() will make the field width 7 (to accommodate 1234567)...even if we specified only six spaces. If only six spaces are available for the string, then use the specification: %.6s

```
char d="1234567";
printf("%.6s",d);
123456   note the .6
```
A note on format specifications

If s has been declared and defined as a string: s="I'm a string" (with 12 characters) then we may select any number of characters and print them in a specified field width:

```
printf("%s",s);   gives I'm a string
printf("%20.12s",s);   gives I'm a string
printf("%-20.12s",s);   gives I'm a string
printf("%20.10s",s);   gives I'm a stri
printf("%-20.10s",s);   gives I'm a stri
```

If x has been declared and defined as an int (x=123) then we have:

```
printf("%d",x);     gives 123
printf("%10d",x);   gives 123
printf("%-10d",x);  gives 123
printf("%010d",x);
   gives 0000000123
printf("%010x",x);
```
gives 000000007B in HEXADECIMAL this 0 pads with 0's

If x has been declared and defined as a float (x=123.456) then we have:

```
printf("%f",x);  gives 123.456000
printf("%10.4f",x);
gives 123.4560
printf("%-10.2f",x);  gives 123.46
```
And that's all until the next issue!

P.J.Ponzo
Dept. of Applied Math
Univ. of Waterloo
Ontario N2L 3G1   *<268'm>*

Repackaging the Color Computer

F.G. Swygert

Putting the CoCo in a Tandy 2000 case - the "2000c".

The Tandy 2000 was a 1983 effort to jump ahead of the original IBM XT. It used an 80186 16 bit processor, 720K 5.25" drives, had better than CGA color graphics (640x400), and was expandable to 768K. It was priced lower than the IBM XT by about $400, yet was much faster (8MHz). The Tandy 2000 was even faster than the original IBM AT (6MHz) which was introduced shortly after. The original AT cost over twice as much as a 2000. Seemed like Tandy had a pretty good thing here...

There were a few problems though. Tandy used a unique graphics format that was compatible with CGA, but the hi-resolution graphics were not compatible with the then new EGA standard. While most MS-DOS programs would run, they had to use the CGA resolution. Only programs written with the 2000 in mind would use the hi-res option. The 720K drives were thought to be the next logical step up. Indeed, they were being used in many state of the art CP/M machines of the time. But IBM by-passed them when they introduced the AT by going directly to 1.2M 5.25" drives. Expansion cards were also a problem, as the bus connectors were unique to the 2000 also. If you wanted to expand, you had to go to Tandy. In 1987 Tandy phased the 2000 out, replacing it with the 3000HL (8MHz 80286) which was only $100 more than the 2000, but compatible with XT/AT soft and hard ware.

The 2000 case was a unique but pleasant design. It was made to be sat on a desk in the normal fashion or stood on one end with a stand. The badge was even designed to be turned so one could read it in either position! It was designed so that expansion cards could be removed or added without removing the case cover. The cover was held on with just two screws. The motherboard was mounted in a metal tray beneath the main case and was easily removed for internal memory upgrades and repairs.

Many businesses and individuals purchased the 2000 when it first came out. They saw it as a faster alternative to the XT and a more affordable alternative to the new AT. Once better AT only software started appearing, and the EGA graphics became popular, the 2000 didn't look so good. Now another upgrade would be necessary. So the 2000 turned out to be a flop after the first two or three years of production.

With all the new hardware out now, the 2000 can usually be picked up at electronics flea markets and ham fests pretty cheap. I gave $25 for mine, but would have paid up to $50 for it. Even if you don't want them, the 720K drives are worth around $20-$25 each to someone who does. Many CoCo OS-9 users like these drives as they offer high capacity while still being somewhat compatible with the standard single and double sided 5.25" drives. The main reason I chose to use this case is that hardly anyone even remembers the Tandy 2000... as far as most people know it WAS a "super CoCo". And I like the tray that holds the motherboard. It appeared to be a relatively easy case to package a CoCo in, and it did turn out that way, provided you don't intend/need to use an MPI. There just isn't room for that, unless you mount it on the floor area of the card cage, use a short ribbon cable to connect to the motherboard, and have the cartridges sticking through the top of the case... Don't laugh! I know at least one fellow who is putting his CoCo in an XT case in just that manner!

Step by step Instructions:

1. Turn the case upside down and remove the two screws (one each side) in the recessed holes in the rear corners. Hold the case together and turn right side up. The screws should fall out. Now lift the rear of the case and pull back. the top should lift right off. Remove any cards from the card cage and disconnect all cables and wires.

2. Turn the case upside down. Remove six screws from the metal "tray" on the bottom. There are two screws on the left and right edges (four total) and two small screws in the center of the left half (with the front facing you). These two small screws hold the card cage connector to the motherboard. Remove the 2000 motherboard by pulling the tray away from the case. The board plugs firmly into an expansion connector, so there will be some resistance.

** If your case does not have the tray, then it was probably discarded or left with the original motherboard. Simply get a piece of metal 17 1/2"x12". This fits flush with the back of the case and between the side "legs". Note where the two screws on each side are placed and drill for them. Bend 1" on each end of the 12" side up 90 degrees, creating a 17"x10" tray. The

metal may be reduced to 11" and only one end bent, leaving the back open for the ports. Don't' drill or bend anything until reading the entire article, as you may want to leave the front open instead.

3. Flip the case back over. Now remove the card cage and disk drive cage. Remove the disk drives from the cage unless they are to be reused. The standard drives are Mitsubishi M4853 models. These are double sided 80 track (720K) drives. They are usable with OS-9 or Extended ADOS3. Both those operating systems allow double stepping the drive heads to read and write 40 track disks. Note that disks formatted on a true 40 track drive SHOULD NOT be written to! The drive head of an 80 track drive is narrower than a 40 track drives' head, meaning that all the data won't be written over. The only safe way to reuse a 40 track disk is to format it at 80 tracks then again at 40 tracks using the 80 track drive. This erases all information. Alternately, get a big magnet or bulk eraser and clean the disks or just use new disks. Special disks are not needed, simply use standard DS/DD disks, NOT DS/HD disks.

4. Now you have a decision to make. If you want to use a Disto 2MB upgrade, or think you might in the future, the motherboard must be placed so that the connectors will be in the FRONT of the computer. This will be no problem, as the motherboard tray is recessed a good five inches under the computer, and you will have to recess it two to three inches more. Cables can be run back under the computer and to the rear if necessary. The motherboard must be positioned so that the RAM area is under the old card cage area so the floor can be cut out, creating enough room for the SIMMs. If only using 512K, the CoCo motherboard can be positioned along the back edge of the tray with the connectors along the back. In this position there is enough room above the processor to cut out for a Rocket board (if it ever comes out!).

5. Position the motherboard on the metal tray. If mounting with connectors along the back, place it so the disk controller is to the right. If using a long controller such as a Disto Super Controller II, about 1/8" of the motherboard needs to be trimmed from the power supply side. Use a pair of tin snips or heavy shears, just don't trim all the ground land that runs

along that edge off and all will be fine. You now need to mark and cut the area along the back where the connectors pass through. I cut the back away entirely along the length of the connectors. You will also have to cut the edge where the drive cable plugs into the controller if using a long one. It is a tight fit side to side! Mark where the RGB connector needs to go through and cut a hole there also. The air hole in the original tray are perfectly spaced to mount a DB-25 connector for the keyboard. Just mark where you want it and cut a rectangle out from the top. It is best to put the connector in the bottom row of holes. If mounting the mother-board in the reverse direction, determine first how close to the back of the case the motherboard needs to be. You may want to shorten the entire tray if making a new one. If using the old, shorten it only in the area where the connectors are. You will want to put the keyboard connector in the disk controller are nearer the front. There is plenty of room between the front of the tray and disk controller for a Puppo keyboard adapter, or between the front and motherboard if using the other placement.

6. Now we need to fasten the motherboard to the tray. You will need two 1/16" bolts long enough to pass through the cartridge connector and tray, about 1" long. You will also need a 1/16" bolt about 1/2" long to go through the hole that formerly held the heat sink near the power supply. Don't forget nuts for them either. Pull all those little rubber buttons from the floor of the tray. Place the motherboard in position with the disk controller attached and mark for the three mounting holes. Put one of those rubber buttons to each side of the hole near the power supply, and just inside each of the holes under the cartridge connector. Place at least one of the buttons under the end of the disk controller, two near the connector edge of the motherboard, and one or two in the center and other edge. Glue the buttons down with any household cement that will stick metal. The tray isn't very heavy metal, so you can get by with punching rather than drilling the holes. I used a 16d nail then flattened the raised edges with a hammer. Once the buttons are positioned, bolt the motherboard in place, being careful not tighten the bolts to tight and warp the board.

7. Now it is time to position the tray. If you have 512K and are planning to mount with the connectors near the back, you will note that the tray won't fall into place. The 512K board is a bit to tall, and you can't gain head room by cutting the plastic floor as it is directly under the power supply (Double check this by removing the power supply. I didn't. It is possible that room CAN be gained in this manner, as the power supply may not sit against the bottom. Mine is all closed up and in use right now!). I went through my hardware box and found the perfect size spacer- 1 1/4" nut (for a 1/4" bolt, not 1/4 inch thick). I also used a nut and three washers under each of the rubber feet to raise the case higher (hint: glue the nuts to the case so you won't lose them later). Only one washer should be enough, the extra two didn't hurt. This will require longer screws to mount the tray and feet. Get eight #6 sheet metal screws 1" long. If you mount the motherboard with the connectors to the front, you can cut the plastic floor above the RAM area out instead of lowering the tray. This was the only unexpected "problem" I encountered. Don't screw the tray in place just yet, there are a few more items to take care of. we just wanted to do all our case butchering up to this point (see step 9 if using a hard drive before proceeding to step 8).

8. Now let's turn our attention to the disk drives. Mount the drives you will be using in the cage. Set the cage in place, but don't screw down yet. Make sure your drive cable is long enough to reach from the drives to the controller. Thread the cable through one of the holes near the drives and leave it in position. Use the existing drive power cables, but don't hook them up yet either. If you are not using a hard drive or adding a third drive, go ahead and screw the drive cage in place and hook the power and drive cables up.

9. There is an area between the drive cage and power supply with two raised pedestals. These are for mounting a hard drive. Unless you were fortunate enough to get a case with a hard drive, the rails will be missing. I mounted a 3.5" hard drive by removing the little speaker and using a screw through one of the pedestals. I made a support for the rear with a piece of wood the correct thickness and about 1" wide and 4" long. I drilled two 1/8" holes in the plastic floor to screw the support down with. Two 3/8" holes were drilled where the drive mounts on the support, but not all the way through the wood. Leave at least 1/8" of material and drill 1/8" holes the remaining way through. Screw the support to the hard drive and then to the floor of the case. I used a Disto SCII and 4-N-1 board. This is the most compact setup to use anywhere. If using a Burke & Burke CoCoXT adapter, a Y cable can be used and the floor above the disk controller cut out. A CoNect XPander should work also. A half height 5.25" hard drive will also fit. A mount for the front can be made from a strip of metal about 1" wide and 5.5" long. Drill it to screw to the pedestals and to the hard drive. You will need to use #6 x 3/8" sheet metal or self tapping screws to come up through the pedestals. Make sure the screws don't touch anything in the drive.

10. I mounted a 3.5" 720K drive above my hard drive. I did this by piggy backing it on top of the HD. Make a plate for each side of the drive to use the side mounting screws. Put the top drive forward enough to go through the front of the case. Mark the case front and cut a hole for the drive. A third 5.25" drive may be mounted instead of a hard drive. It would also be easy to add an external drive connector to the existing drive cable. Use a DC37 (RS-449 37 pin) or Centronics printer (36 pin) crimp on connector. The drive cable is only 34 pins, so when making an external cable, remember which end you left the extra pins on! The extra pins could possibly be used to carry power to a drive. These connectors aren't carried by RS.

11. Now for power to the motherboard. The green ground wire need to be connected to the motherboard. Use a male spade connector sized to fit the existing female connector. Connect this to any ground on the motherboard- I screwed a wire under the cartridge connector hold down bolts. The power connectors of the 2000 power supply are as follows by color:

Orange = +12V
Red = +5V
Black = Ground
Yellow = -12V
Grey = +5V

I don't know how many amps each supply, but I have no problems running the drives mentioned (2 5.25" and 1 3.5" floppies plus a 3.5" hard drive). You will need some type of four wire connector to go between the power supply and motherboard. A disk drive extender cable works well.

To recap from the last article, power the motherboard by: 1) cutting the +5V regulator out. 2) Add +5V to the end of R19 closest to the +5V regulator. 3) Add -12V to the unbanded (anode) end of D4. 4) Add +12V to the banded (cathode) ends of D2 and D14. I used the original motherboard power connector (long one). The

backplane connector (short) was used to make another drive power cable for the hard drive. My 3.5" drive was a +5V only model. I did not use the grey +5V line. I suspect it is a low amperage line, but I'm not sure. Before continuing, go back and check all your power connections and make sure there are no bare wires dangling. Fold and tape all unused power supply connections. The reset switch on the front of the case can be used by connecting the two leads to the tabs on top of the CoCo reset switch. The original switch will remain active also. Use a connector between this and the motherboard.

12. Now we are ready to connect all cables between the motherboard, controllers, and devices mounted in the case. Then screw the tray in place. Turn the case over. The last step is to make a cover for the back. Use the back of the card cage as a pattern to make a metal or cardboard cover. Slip the straight edge (the other edge should be angled slightly) in the groove on the power supply. If you use metal, either squeeze the groove tight on the metal plate or insert a narrow piece of cardboard to make it tight. I placed a small dab of household cement on the other end near the short post also. Now slip the cover in place, turn back over, and insert the two cover screws.

13. Now for the acid test... plug everything up and turn it on! The power supply takes a couple seconds to kick in, so don't panic right away! Listen and smell for anything strange. At the first sign of something wrong, turn the power off and double check all your connections. Hopefully, everything will work just fine. That plug on the back of the power supply is switched also... handy for the monitor!

An Alternative Method...

It seems that I'm not the only one who decided the Tandy 2000 needed to be "upgraded" with a CoCo motherboard. I talked with Carl Boll at the Atlanta 'fest. He has also used the T2000 case for a CoCo. In his, the motherboard is mounted to the extreme right of the metal tray with the connectors along the back of the case. Carl didn't put the disk controller in the expansion slot though. Instead, he used a Y cable that extends the bus into the cardcage area of the case. His disk controller and an RS-232 Pak reside there.

In the next issue we will finish this series by taking a look at mounting the CoCo in a PC type case. There are several alternatives. We will also look at the best way to make a reliable Y cable.

< 268'm >
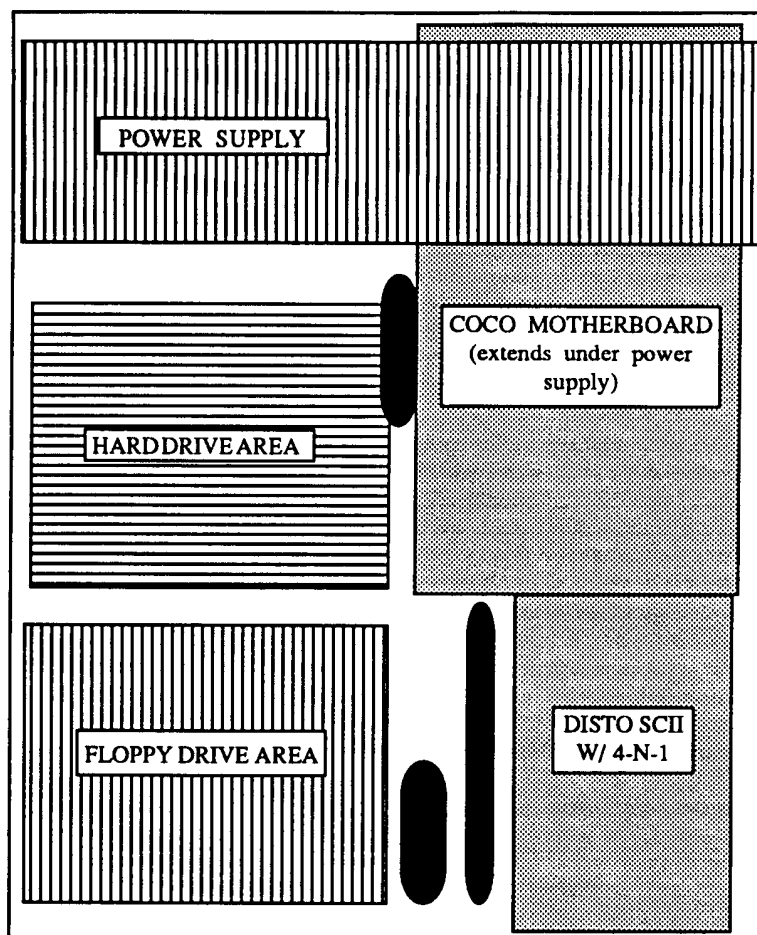
Diagram of case from top showing component locations. Motherboard and disk controller can be rotated 180 degrees and have connections on the front. Motherboard can also be moved out from under the power supply and a Y cable used- simply slide the motherboard over into the area shown for the Disto SCII. The dark areas are the cable slots already in the case.

Beginner's Showcase
(CoCo Clock, continued from page 25)

```
190 NEXT S
200 IF M+1/10=INT((M=1)/10)THEN
TIM
ER=0:PUT(104,64)-
(159,103),A:U=U+TIM
ER#12
210 TIMER=0:PUT(128,56)-(175,103),A:U
=U+TIMER#12
220 IF M=59 THEN BM=0
230 NEXT M
240 IF (H+1)/10=INT((H+1)/10) OR H=12
THEN TIMER=0: PUT (24,64)-(79,103),A:
U=U+TIMER #12:GOTO 260
250 TIMER=0:PUT(48,64)-
(71,103),A:U=U
+TIMER#12
260 IF H=12 THEN BH=1
270 NEXT H
280 GOTO 80
290 DIM L$(57),A(15)
300 L$(48)="BRHU4ER2FD4GNL2BR":
```

```
L$(49)="BRR2LU6NGBR2BD6":L$(50)=
"BU5ER2FDGL2GD2R4":L$(51)="BU5ER
2FDGNL2DGL2NHBR3":L$(52)="BR3U6
G3R4BD3":L$(53)="BRNHR2EU2HL3U2
R4BD6"
310 L$(54)="BUU3NE2BD3FR2EUHL2G
BD2BR4":L$(55)="BU5UR4DG4DBR4":L
$(56)="BRHUER2EUHL2GDFR2FDGNL
2BR":L$(57)="BRNHR2EU4HL2GDFR3B
D3"
320 L$(46)="BRBU2NUBD2BR"
330 PRINT@72,"<<<COCO CLOCK>>>"
340 PRINT:PRINT"BY KEIRAN KENN
Y, THE HAGUE, 1993"
350 PRINT@226,"";:INPUT"ENTER
HOUR(1-12):";BH
360 IF BH<1 OR BH>12 THEN PRINT@2
24:GOTO350
370 PRINT@288,"";:INPUT"ENTER MIN
UTE(0-59):";BM
380 IF BM<0 OR BM>59 THEN PRINT@2
88:GOTO370
390 GOTO60
400 POKE SL,0:CLS:END
```

< 268'm >

Beginner's Showcase

Programmers of all skill levels will appear here. The emphasis is on short, easy to type in programs that illustrate programming techniques. Typing in examples is a great learning tool! If you have a short program or subroutine in any language, drop us a line! Any program/subroutine printed may be used by anyone within their programs, even commercial programs, as long as credit is given the author and magazine within the code (REM statements) and documentation.

TP-10 Graphics Dump

Here is a nifty little program I wrote wayback when I only had a TP-10 printer (yes, even I was a beginner once!). I wanted a way to do graphic dumps, but the TP-10 was not capable of graphics...SO...I made it do them!

This program makes three strips that can be taped together to have a BIG wall poster of a PMODE 4 screen. It works great, and this is a great use for the TP-10 (along with MiniBanners which prints up to 4 line banners on a TP-10 as well).

```
10 CLS:PRINT@36,"TP-10 G
RAPHICS DUMP 1.0":
PRINT@98,"A ' WHAT A C
ONCEPT' PRODUCTION":
PRINT@16 8,"BY ALLEN H
UFFMAN"
15 PRINT@257,"THIS PROG
RAM WILL DUMP A PMOD
E 4 SCREEN IN MEMORY
TO A TP-10. SOME ASSEM
BLY REQUIRED, CUT ON
DOTTED LINES."
20 PRINT@449,"PRESS ENT
ER TO BEGIN DUMPI NG "
25 IF INKEY$<>CHR$(13) T
HEN25
30 PRINT#-2:PRINT#-2: PRI
NT#-2,STRING$(32,45)
35 PMODE4,1:SCREEN1,1
40 FOR A=0 TO 2:PRINT#-2,"
TP-10 Dump 1.0 by Allen Huff
man.":PRINT#-2, STRING$
(32,143): FOR B= 255 TO 0 ST
EP -1: FOR C=A*64 TO A*64
+63
45 IF B/2=INT(B/2) THEN Y=0
ELSE Y=1
50 IF PPOINT(B,C)>0 THEN
RESET(C-64*A,Y) ELSE SET
(C-64*A,Y,0)
55 NEXTC:IF B/2<>INT(B/2)
THEN FOR D=0 TO 31:PRINT
#-2, CHR$ (PEEK (1024+D))::
NEXTD
60 NEXTB:PRINT#-2: PRINT
#-2: PRINT#-2, STRING$ (32,
143):PRINT#-2:PRINT#-2,ST
RING$(32,45)
65 NEXT A:PRINT#-2, STRIN
G$(4,13)
```
< 268'm >

CoCo Clock

This program, reprinted from "CoCo-Link" of Australia, presents a 12 hour digital clock on a CoCo PMODE0 screen. Time is pretty accurate, but changes can be made to the value DL in line 20 for changes. This program operates in the high-speed mode. Press CLEAR to end and return to normal speed.

```
1 REM DIGITAL COCO CL
OCK
2 REM BY KEIRAN KENNY
10 CLS
20 DL=945
30 IF PEEK (33021)=50 THEN
SP=65497:SL=65496 ELSE SP=
65495:SL=65494
40 POKE SP,0
50 GOTO 290
60 PMODE0,1:PCLS:SCREEN
1,1
70 GET (0,0)-(55,39),A
80 FOR H=BH TO 12:M$=RIG
HT$(STR$(H),LEN(STR$(H))-
1):IF H<10 THEN H$="0"+H$
90 FOR M=BM TO 59:M$=RIG
HT$(STR$(M),LEN(STR$(M))-
1):IF M <10 THEN M$="0"+M$
100 FOR S=0 TO 59:S$=RIGHT$
(STR$(S),LEN(STR$(S))-1):IF
S<10 THEN S$="0"+S$
110 W$=H$+"."+M$+"."+S$
120 DRAW"S24BM24,103":TIM
ER=0:FOR ZB=1 TO 0 LEN(W$)
:DRAW LS(ASC(MID$(W$,ZB
,1)))+"BR":NEXT:U=U+TIMER
#12
130 IF PEEK(135)=12 THEN 4
00
140 IF (S+1)/10=INT((S+1)/10) T
HEN 150 ELSE IF PEEK(341)=
247 THEN S=S+1
150 IF PEEK(342)=247 THEN
S=S-1
160 FOR D=DT0DL-U:NEXT:
U=0
170 IF (S+1)/10=INT((S+1)/10) T
HEN TIMER=0:PUT(184,64)-(
235,103),A:U=U+TIMER#12:GO
TO 190
180 TIMER=0:PUT(216,64)-(23
9,103),A:U=U+TIMER#12
```

The following was received
from Burke & Burke Oct. 7,
1993:

"Dear Customer,

Thank you for placing an advance order for the Rocket, Burke & Burke's planned 68000 accelerator card for the Color Computer 3. We have received a number of advance orders for this product, but total orders did not exceed our minimum level of 100 units.

This limited demand, combined with recent price increases from our software vendors and dynamic memory suppliers, have made it impractical for Burke & Burke to produce the Rocket at the proposed price of $195. We have considered offering the Rocket with less third-party software, more Burke & Burke software, a higher base price, and no memory, but have decided against doing so since these changes provide a less capable platform and delay the project by several months.

After careful evaluation, we have decided to delay introduction of the Rocket indefinitely."

Micro News

administration thinks that's the way it should be. This all started when the U.S. Court of Appeals for the District of Columbia ruled that electronic mail/memo back-up tapes made during the Reagan and Bush administrations couldn't be erased. The court decided these tapes were official records under the Federal Records Act and must be kept in long-term storage. The court panel maintains that all electronic messages must be maintained in their entirety, as officials could "omit fundamental pieces of information... such as the identity of the sender and/or recipient and the time of receipt." This information could later be used to uncover deceptions and mis-use of government positions, etc. Our lawmakers don't like being subject to the same laws as everyone else! Personally, I agree with the court on this one.

■■■■■■■■■

model over the years... *he was there when it happened!* Ordering information can be found in the *Christmas Shopping List* under WORLD-COMM. The book is 6"x 9" and contains 306 pages. I ordered one as soon as I saw the ad, and have already finished reading it. The book is very informative and entertaining, a *must have* for the computer nut even though there is very little about the CoCo or OS-9 in it.

■■■■■■■■■

The Clinton Administration has appointed Ron Brown (Commerce Secretary) to head the National Information Infrastructure (NII) task force. The goal of NII is to build a nationwide data network by combining existing data, cable TV, and telephone networks into a high speed system. There will be as near universal access as possible, much like access to telephones today (there will be public access terminals in strategic loca-

If you have new soft or hardware products, let us know! We will gladly print a free blurb for you here in MicroNews whether you advertise or not (though we will be happy to have your ad also).

I for one would be happy to spend as much as $300 on a Rocket with no memory. The only practical alternative (price wise) is to build your own PT68K2 system using surplus parts- at a cost of $700-$800. See the editorial for further comments on the Rocket.

■■■■■■■■■

The Internet can be used to send long distance faxes without long distance charges. How? By routing the fax through a "fax cell site". Any Internet site can serve as a fax cell as long as it has a fax/modem attached. A fax is sent via E-mail with the desired fax phone number in the address line. Regular fax machines can also dial into the system. For more info, send E-mail to:

tcp-faq@town.hall.org.

■■■■■■■■■

Would you trust government officials to decide which records they should keep and which they should destroy? When it comes to E-mail and other electronic memos, the Clinton

Does anyone remember when Stan Veit owned *Computer Shopper* magazine four or five years ago? There was support for nearly all computers, including the CoCo. This changed shortly after Ziff-Davis bought the magazine and turned it into another clone book. I always enjoyed the articles on the pioneers of the computer industry. Like how South West Technical Products Company started making kits based on the MC6800 and later the MC6809. Frank Hogg, Peter Dibble, and several other well-known OS-9 users once used these machines. There was even a story about how Mr. Charles Tandy himself offered to buy Mr. Veit's computer store in New York City. Now these stories (plus more, with additional information and photos) have been compiled into a book- *Stan Veit's History of the Personal Computer*. Mr. Veit owned one of the first successful computer stores in NYC. He sold nearly every make and

tions, such as libraries and post offices). The private sector will be building the system at a total cost of $50-$100 billion, with the government adding $1-$2 billion yearly for promotion. The government will also be providing regulation and coordination.

It's about time we (the U.S.) started something like this. France has had a somewhat similar system for years now. The French government required homes to have terminals in order to gain universal acceptance. Certain government provided services are simply unavailable without a terminal. The U.S. may have to do something similar. Sure would be nice to complete an electronic tax form and zap it right in, get a refund (hopefully) deposited straight to your bank account...

■■■■■■■■■

Microware has officially announced that they will support the PowerPC. This probably means a port of OS-9000 to the MPC601 processor.

I will need at least a source code sample. G-WINDOWS code can be made stand alone or be included in the original source code. A test is included to determine whether G-WINDOWS is running, permitting the program to take alternate action if it isn't.

Terms are simple: The program may be distributed with no royalties to DELMAR CO. I retain the copyright for the portion of the code I wrote. Credit for the G-WINDOWS portion of the code is to be given me. If the programmer sells his program through dealers/distributors, I have the option of carrying the software at terms no less favorable than that given other dealers/distributors.

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FOR SALE

Multi-Pak, 26-3124 (small), upgraded for CC3- $70; OS-9 Level II- $35; Multi-Vue-$10; Koronis Rift-$10; Rogue-$10. Shipping included to US. John Gar, RR1 Box 141, Newel, SD 57760

Replacement 68B09E for all CoCos. $7 each includes S&H. Timothy D. Boos Sr., Rt. 1 Box 155, Peculiar, MO 64078

SALE OR TRADE

I have approximately 24 never used Tandy CC3 programs for sale or trade for CC3 soft/hard ware. Send SASE for list. John R. Mott, Jr., Box 26246, Phoenix, AZ 85068-6246

Extra CoCo 3s! Have 5 CoCo 3s, 6 CM-11 monitors, 3 5 1/4" drive systems. Call and make offers on one or all. Arnold Stark 813-654-4198 (day) or 813-621-4987 (evenings)

CoCo 2, 64K; CoCo 3, 128K; CM-8 monitor, dual 5 1/4" floppy system. Call and make an offer! Jenny 510-779-1102

WANTED

Tandy OS-9 C Compiler with documentation. Contact Joe Charbonneau 527 Jarvis St., Windsor, Ontario N8P 1C8 (Canada); Phone 519-735-8630

Used CoCo hard/software. Will buy by piece or entire collections. Rick Ulland, 449 South 90th St., West Allis, WI 53214

E.A.R.S. hardware/software by Speech Sytems. Call Johnny at 713-479-4002

This Issue's "microdisk"

OS-9 Content:

        KFORMAT A public domain multiple disk
        formatter.Requires Level2, Basic 09

Disk BASIC Content:

        COLORSHO.BAS
        COLORSHO.ASM
        MAKESHO.BAS
        MRMAZE.BAS
        MAKER.BAS
        EASY.MAZ
        OUTORDER.MAZ
        TP10.BAS
        CLOCK.BAS

"microdisk" is available for $40 per year , $21 for six
months, or $6 per issue. Overseas must add $10/year,
$5/six months for air mail delivery.
"microdisk" is NOT a stand-alone product, but
compliments "the world of 68' micros" magazine.

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*OS-9/OSK USERS: Don't criticize the lack of OS-9/OSK
programs and articles... DO SOMETHING ABOUT IT!
See "Submitting Material", this page.
Note: There will be more OS-9/OSK in the next issue!*

MultiBoot by Terry Todd & Allen Huffman
Now have up to SIXTEEN bootfiles on your startup disk!
Hot off the assemblers and compilers is a great must-have utility which lets
you have up to 16 bootfiles on one disk! No more boot disk floppy-swapping!
MultiBoot will install itself to a cobbled boot disk and, upon typing "DOS",
will greet you with a scrolling menu of available bootfiles!
        OS-9 Req: CoCo3, OS-9 Level2........................$19.95

Towel by Allen C. Huffman
The first EthaWin program - a disk utility for OS-9.
A program no intergalactic hitchhiker should be without! Use a mouse or
keyboard hot-keys to perform common file and disk commands from pull-
down menus. Tag multiple files for Delete, Copy, Rename, etc., and even have
point 'n click disk Backup, Cobbler, Dcheck and other commands. User menu
lets you specify up to seven of your own commands to execute. Runs under
the EthaWin interface on a high-speed text screen. All commands/colors
configurable.
OS-9 Req: CoCo3, OS-9 Level2...........................$19.95 OS/K Req: MM/
1 or K-Windows Compatible...........$24.95

1992 CoCoFest SIMULATOR by Allen C. Huffman
Graphics "adventure" based on the 1992 Atlanta CoCoFest
The next best thing to having been there! Digitized graphics of the event and
a text command parser (ie, "get the box of disks") let you see all the vendors
and even run into some famous faces of the CoCo Community. The show area,
seminar room, and portions of the hotel are all represented. No true "goal",
but you do have to figure some things out, like how to get into the show and
how to buy items from vendors. Runs on a 640x192 hi-res graphics screen.
        OS-9 Req: 512K CC3, OS-9 Lvl 2, 490K Disk Space...$9.95
        OS/K Req: MM/1 or 100% K-Windows Compat.......$14.95

Worlds at War: *A complete wargame simulator package!*
Finally, this Canadian masterpiece is available. Icon editor lets you build
full color game pieces. Map editor lets you put together a multi-screen
playfield. Options such as pass, move, attack, status, cargo, search, and
build make this game a real "blast".
        OS-9 Req: 512K CoCo3, OS-9 Level2...........................$SOON!

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Submitting Material to 68' micros

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We accept program submissions in any programming
language for DECB and OS-9 (6809 & 68000) of any type
(games, utilities, etc.). Articles are accepted covering any
aspect of Motorola 68xx and 68xxx processors. This in-
cludes microcontroller projects as well as alternate operat-
ing systems. If there are enough subscribers interested, we
will begin accepting programs for alternate operating sys-
tems as well.

Submissions should be sent on disk in ASCII and execut-
able formats. A printed listing should also be included if
possible. A letter describing the program or article is also
necessary. Submissions can be made to DSRTFOX on Del-
phi, or dsrtfox@delphi.com via Internet.

Media accepted: 5.25" disk in CoCo OS-9 (35/40T, SS/DS), IBM
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