

# TWIN CITIES 128

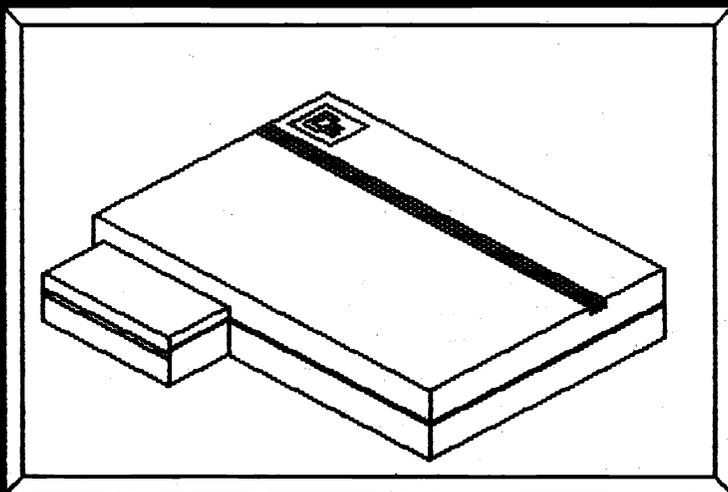
THE COMMODORE 128 JOURNAL

PROUDLY PRODUCED COMPLETELY ON A C-128 !!!

8/25/86  
SOFTWARE PLUS  
PHONE 837-6900  
\$-1.95

## Special Report: Monitoring the Situation

A detailed comparison of video display options for your Commodore 128, including a glossary and a technical specifications chart.



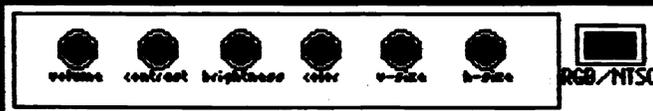
## July/August 1986

### Features:

*Rumor/Opinion/Mayhem*  
*CBM Engineers Forum*  
*Kids, Summer, & C-128*  
*More "Forgotten" BASIC*  
*CES Highlights*  
*RAM Expansion Overview*  
*CP/M Gems*  
*Interior Insights*  
*Sparrow's Slick Tips*

### Reviews:

*Vizastar 128*  
*Bob's Term Pro 128*  
*Super 'C' 128*  
*1001 Things on C-128*  
*Print Shop Companion*  
*Q-Link Version 3 software*



and complete instructions  
for upgrading the  
1700 RAM expansion unit to

*512 Kilobytes*

geos file edit options fonts TC-128

Plus an  
update on  
**GEOS**  
and a special  
**FONT  
GUIDE**

TWIN CITIES 128

Copyright July/August 1986  
All material in this publication is protected by the laws of  
the United States and may not be reproduced without the  
written permission of the Managing Editor.

Loren Lovhaug.....Managing Editor

Avonelle Lovhaug.....Associate Editor

Hugh Morris.....Assistant Editor

Doug VanOrnum.....Staff Writer

Todd Madson.....Staff Writer

Randy Margolis.....Staff Writer

Gary Barrett.....Contributing Writer

Harold Shore.....Contributing Writer

Computer graphics: Loren Lovhaug, Doug VanOrnum,  
and Hugh Morris

Hardware and Software used to produce this issue:

Commodore 128 Personal Computer  
Commodore 1571 Floppy Disk Drive  
Comrex CR-5400 Monochrome Monitor  
Amdtek Color I Composite Color Monitor  
Commodore 1350 Mouse Controller  
Commodore DPS-1101 Daisy Wheel Printer  
Star Micronics SG-10 Dot Matrix Printer  
Xetec Super Graphix Interface  
RCA Portable Video Camera and VCR  
C-128 Ultra Hi-res 1.1  
Paperback Writer 128  
Paperclip 128  
Superscript 128  
Superbase 128  
GEOS 64

Twin Cities 128 is available by subscription to those who  
live outside of the Saint Paul/Minneapolis area.  
Send your \$22.00 check for one year (12 issues of TC-128) to:

Twin Cities 128 (International Headquarters)  
P.O. Box 4625  
Saint Paul MN 55104

Or call: Twin Cities 128 ONLINE  
(612) 645-6482  
300/1200 baud - 24 hours a day

**Twin Cities 128  
Table of Contents  
Issue 7 July/August 1986**

Opinion/Rumor/Mayhem.....4  
CES Highlights.....5  
Monitoring The Situation.....7  
Kids, Summer & C-128.....11  
GEOS Update.....14  
RAM Expansion Overview.....15  
RAM Charge: Upgrade to 512K.....16  
An Examination of BBS Software.....18  
Vizastar 128.....20  
BobsTerm Pro 128.....21  
Super C.....22  
1001 Things To Do With Your C-128....23  
Printshop Companion.....24  
CP/M Gems.....25  
Q-Link Update.....25  
CBM Engineer's Forum.....27  
Forgotten BASIC.....30  
Sparrow's Slick Tips.....31  
Insider Insights.....32

**Computer Widows** - if your husband, boyfriend, or any friend is a computer enthusiast, you are very familiar with this term. Signs of being a computer widow include: your partner numbering in hexadecimal or binary, his voice sounding like a modem carrier signal on a phone line, or worse yet, conversations held between the two of you only if you leave messages for him on his favorite board. One thing that really exasperates the problem of computer widowhood is that many of us married to computer addicts cannot possibly see what draws our partners to their machines. "What does it have that I don't?" we cry. Jealousy is very common for we computer widows. We threaten to fold up their diskettes, bury their disk drives, watch "All My Children" on their monitors, and hide their computers in the garage, hoping the suckers will disappear with someone else's husband at your next garage sale. The problem is especially pronounced in the spouses of C-128 owners, because the old "we can't afford that new..." just doesn't work all of the time, since C-128 software and hardware is often very affordable. Even if they aren't spending any more money on the computer (how come the computer gets expensive presents and we don't?), it doesn't cost much once someone has a modem to get on every local board and stare at the screen for hours, downloading as if there would soon be a public domain shortage, and free programs would be a thing of the past. These first two stages of computer widowhood (buying up and downloading) are followed by a third stage: invasion of the computer lovers. They will infiltrate your house, and brainwash your children. Keep a particularly close eye on your junk food, your peripherals, and especially disks and manuals. These people are not to be trusted. You may think me exaggerating, but consider this story: Mrs. Johnson was a normal wife with a normal family until her husband bought a C-128. She survived the first two stages, despite the fact that they had to take a second mortgage out on the house, and their phone bills were so high she had to hire out her oldest son to sell telephone books to people without phones. However, when stage 3 hit, her life fell apart. The entire house became the work station for ten computers and their owners, who's own families had already kicked them out due to the extreme nature of their condition. She tried to communicate with them, but unfortunately, they had lost all communication abilities except for screen to screen contact. She finally gave up on her husband when she saw he and another gentleman trying to connect the food processor and the computer together. He evidently was muttering something like, "I know all we need is the right interface to make this work." She didn't even look back as she drove away. (The names have been changed to protect the addicted). How can you prevent this from happening to you? Well, there are a few theories on what can be done, although little research has been conducted. First, prevention is the best medicine. Before it is too late, remove any technical electronic materials from the house. Censor articles in magazines and newspapers on personal computers. Try to make him think about the good old days, before everything got so automated. If you receive a incorrect bill due to a computer error, you have received a blessing from God. Frame it, and make a big deal

about all the problems that computers cause. If your spouse already has computer equipment, you should know some important tips. First, lightning can kill a computer and peripherals if they are plugged in when it strikes. Make sure to leave his equipment plugged in during an electrical storm. Also, hiding disks is a good way to increase his frustration at the entire computer notion. If things have gone too far, there is another alternative, but this is only as a last resort. If you can't beat 'em, join 'em. That's what I ended up doing. Hey, honey, did you get that new piece of software I wanted?

### Some other thoughts:

If you are like me, occasionally it gets a little tiring of constantly being considered inferior in the computer world because you are a woman. This woman was actually told by a rather blunt man that he thought my husband wrote my articles for me, and that he just used my name. Can you believe the nerve of some people? I think we women are going to have to get more involved in these silly computers, and more vocal, too! Anyone interested in a C-128's and Women User Group?

### WHO ARE WE???

Recently, Twin Cities 128 has received a lot of mail from people and user groups who have decided to rename the magazine to "The Commodore 128 Journal" or "Twin Cities". In addition, Loren has received some mail addressed to Ms. Loren Lovhaug. If you think that the magazine needs a new name, let us know. However, I can't do anything about Loren's male gender (nor do I want to), so I guess you'll just have to live with that one.

### 3.5 INCH DREAMS

I don't like to be the bearer of bad news, but I think it is better to set the record straight instead of leaving people in the dark and building false hopes about products that MAY NOT ever come to market. I know disappointment first hand, you see I was a Commodore LCD believer. I really hope that Commodore does end up marketing a 3.5 inch floppy disk drive, but all indications are (we have it from three independent sources) that the planned 1581 disk drive is on permanent hold and very likely will never be marketed. I can't tell you how much the prospect of the death of this drive disappoints me. The 3.5 inch media is infinitely superior to the 5.25 inch disk media we are currently saddled with for several reasons (size, durability, and storage capacity, to name a few). If you would like to see the 1581 become a reality, we suggest you contact the people who will decide its fate. Write or call:

Pete Baczor, Customer Support  
c/o Commodore International  
1200 Wilson Drive  
West Chester, PA 19380  
(215) 431-9200

Let's let Commodore know what kind of products we would like to see (and buy)!



The 20th annual Consumer Electronics Show was held June 1st through the 4th at McCormick Place in Chicago. Commodore International, after almost pulling out of the show completely, hastily put together a somewhat woeful exhibit in an out-of-the-way corner of the building housing the home computer products. The only "new" product shown by Commodore was their revamped line of C-64 equipment. The C-64C is simply a Commodore 64 in a new case which looks exactly like a C-128 with the numeric keypad replaced by the old style function keys. They've also enclosed the 1541 drive in a new case with similar coloring. Despite the fact that there is nothing new internally about these machines, I believe that their classy new styling will spur a new surge of sales, especially considering that the computer will be bundled with Berkeley Softwork's GEOS operating system. Rumor has it that, starting sometime this fall, the C-128 version of this operating system will also be included with new C-128's sold.

The rumored 3.5" disk drive was nowhere in sight and when I queried a Commodore staff member about it, he returned a blank stare as if I were crazy. Well, I guess one can't expect a company representative to be too candid while on the job. (Editor's note: we later found out that the 1581 as it is deemed, has been shelved and is likely to become 1986's vaporware product, like last year's 1572 and LCD...That's right no 3.5" drive. Unfortunately, RUN Magazine printed the "hot tip" they received from the marketing boys at Commodore complete with pictures before Commodore put this peripheral on hold.)

The real show, as far as C-128 owners are concerned, was on the main floor. This was the domain of the major software vendors. It took a little imagination to ignore the huge Atari exhibit and get to the people who market products for our machine. Apparently many major vendors are coming to the realization that the "lowly" C-128 has already sold close to a million units in not quite one year of production. Fortunately many of them are sitting up and taking notice of this market.

New from Precision Software (the Superbase people) is "Super Disk Doc". This is a \$24.95 (list) program which appears to parallel the several excellent public domain disk-doctor type programs. Unfortunately, only the package was visible, and there was no descriptive literature or demo running. If it has enough bells and whistles, it may be worth a discounted price of under \$20. We'll have to wait and see on this one. It works on any Commodore computer including the C-128 in the 80 column mode. The representative from Progressive Peripherals, which distributes this line said they are shipping now.

Timeworks unveiled a product which should make users of the finest productivity machine in the world ecstatic. It is called Partner 128. This is a cartridge based "desktop accessory" type of program which incorporates the following features:

1. Appointment Calendar & Date Book. With on-screen calendars and an actual little database program for your appointments. This appeared to me to be the strongest feature of this excellent program. Very fast.

2. Memo Pad. Note taker which saves to disk or will print out immediately.

3. Name & Address List. Another dedicated database.

4. Calculator. Multifunction calculator which will also make "paper tape" printout on your printer.

5. Typewriter. Turns your computer into a line printing typewriter.

6. Envelope Addresser & Label Maker. Yet another dedicated database all set up for label printing and envelope addressing on your printer.

7. Screen Dump. I'm not quite sure if this will print high resolution screens.

8. Phone List & Auto-dialer. Database which will keep track of phone numbers and auto-dial using your auto dial modem for voice communications.

Now keep in mind that any of these sections are always available no matter what program you are currently running by pushing a button on the cartridge. The Timeworks people were going all over the show trying to find an application with which Partner 128 would not work, and the only ones were other cartridge base programs. To me the only big drawback of this excellent package is that it occupies the same slot as the memory expansion unit (unless some kind of motherboard arrangement will work).

In the Mastertronics brochure was listed two C-128 only games which are the first I have seen which are dedicated to the C-128. They are Kick Start, a motorcycle racing game, and Last V-8, also a racing game. Unfortunately, they were not on display.

To me the real star of the show was definitely Paperclip II. This is a major enhancement to Paperclip 128 and will assuredly be the most talked about program for the C-128 for a long time. Even the program's main screen looks just like the old Paperclip, all you have to do is hit F2 and down pops a color menu with about eight choices of color displays. The reason for all these choices is because the video preview mode has been enhanced to include true underlining, boldface, and italics on the screen. Also, you can pause the display and scroll backwards! You will see all headers, footers, page numbering, etc. in the video preview. An enhancement to the table of contents creator is true chaptering, and you can now run off a table of contents without viewing the whole document. Document loading speed has been increased about 5 times, although saving will be about the same speed because, according to the Batteries Included representative they found the 1571 burst mode to be too unreliable for saves. The brochure states that multiple column editing will be a reality, but I did not see this in action.

For the first time, Paperclip II includes word wrap, which is toggled on and off with the F8 key. They had a sample document of 271 80-column lines loaded and the change to and from word wrap mode took 5 seconds. This feature should make a lot more people consider using Paperclip since many people insist on a word wrap feature.

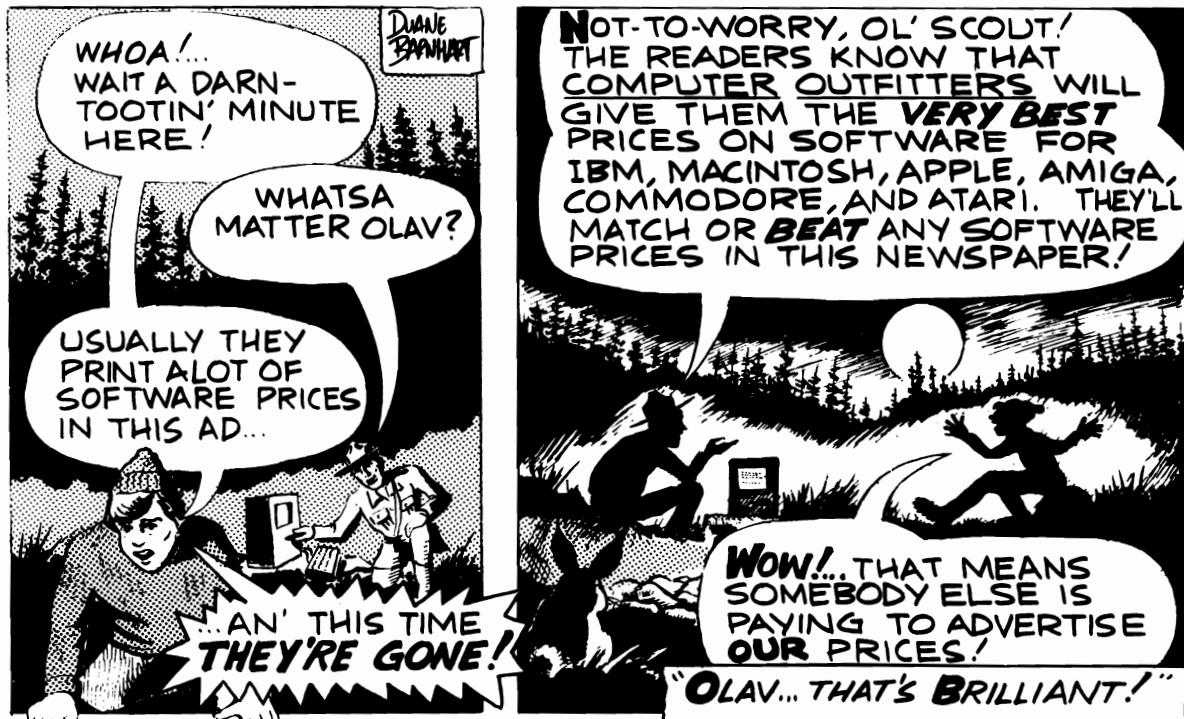
The cryptic "checkmark" commands which are needed to access so many of the program's features can now be typed in english. For example the old justification command was jul. You can still use this, but you may also type "justify on" or "just on" or anything close enough for the program to recognize the command. The spelling checker included with the new program contains 30,000 words and can be loaded into the RAM expansion for 30 second spelling checks.

The real news, however, is the integrated terminal package. It would be difficult to find a more complete piece of telecommunications software at any price. Hit the ALT key and a terminal menu drops down. You may transmit up to an incredible 9600 baud, which means instantaneous modemless transfers between computers hooked together by their RS-232 ports. Not only can you transfer the text in the normal Paperclip text area, but you can do programs as well since the terminal comes equipped with X-modem and Punter protocols! For text transfers, you can automatically filter out control sequences, or leave them in if you're transferring to someone who will be using a Paperclip compatible program. About eight modems are supported including 1670, 1660, Westridge,

Mitey Mo, and others. Also included is a phone directory in which you can set up 10 frequently called numbers, along with each board's baud rate, wether it needs line feeds, and so forth. You can then set up a macro, telling the terminal to "call phone number one, then three, then six, and cycle though these until you get an answer". Pretty sophisticated stuff for something that is an extra in your word processing package! You can also save all your terminal configurations to disk as a separate file.

The \$79.95 price tag seems more than fair to me, and if you have Paperclip 128 with Spellpack, you can upgrade for \$35.00. I sent mine in the day I got home. (Editor's note: Randy recently received his disk back from Batteries Included with a note that stated that they would be unable to ship the upgrades for another eight weeks minimum. This means he is looking at early September before this product will appear on his doorstep.)

Well, that about covers the C-128 highlights. I hope that in the future more software vendors realize that the huge installed base of C-128's justifies the creation of more programs similar to the above examples.



# COMPUTER OUTFITTERS



OUR PHONE LINES ARE OFTEN BUSY, SO PLEASE KEEP TRYING!

2730 Snelling Ave. N. Roseville

**631-1763**



Buying a monitor for your computer is kind of like buying a car; everyone wants to tell you what kind THEY like best...but in the end, it all boils down to what YOU like and feel you want to spend your hard earned dollars for.

It used to be REAL easy to buy a color monitor for your computer in the "good old days" of the VIC-20 and C-64...you had basically one choice: buy the monitor Commodore came out with, namely the C1701 or C1702.

Today, however, there are scores of manufacturers of computer monitors that are finding that our money as consumers spends just as well as the IBM users. This makes for a better selection but also may lead to some confusion over exactly what you should and shouldn't look for or listen to in the sales pitches and ads you see and hear.

Consider this article your primer on selecting a monitor for the C-128; I hope both the experienced computerist and the novice will find useful information in it to use in making the logical monitor selection!

#### What's This Funny Plug With The Pins For?

Before you can buy a monitor for your C-128, you have to know a few terms that you'll be confronted with in the computer stores and in ads and articles you'll see in magazines like this. Once you translate them from Computerease into English, they're no longer as intimidating as they used to be! Here's some of the most common terms that you'll run into:

#### Monitor Type:

**MONOCHROME:** With this type of monitor, you'd better like one color, 'cause that's all you get. This type of monitor is usually what we call a "green screen", meaning that the letters, graphics, etc., all appear as green characters against a black background. Amber is also a popular tint for monochrome screens.

**COMPOSITE:** This is one of many types of color monitors you'll see. A composite monitor is usually only used for games, C-64 programs and the 40 column mode of your C-128. To connect this type of monitor to your C-128 you need only use a cable connecting the 8-pin round monitor jack on your C-128 to two jacks on the monitor—the VIDEO and AUDIO. You can't get a color 80 column picture on this monitor. This is also referred to as an NTSC COLOR COMPOSITE monitor.

**LUMA/CHROMA:** The Commodore C1702 is the perfect example of a Luma/Chroma monitor; instead of just video and audio jacks on the back of the monitor, there are three—Audio, Luminance (Luma), and Chrominance (Chroma). Generally, you will be able to get a crisper, more detailed color picture with this type of monitor. Like the Composite monitor, though, you are only going to get a color picture in the 40 column mode of your C-128 or in 64 mode.

**RGB:** Your going to see this term a lot when you go monitor shopping. Essentially, this means that the computer sends separate Red, Blue and Green signals to the monitor instead of just a composite or luma/chroma signal. The picture, therefore, can be controlled more exactly by the computer,

and in this mode, you can, in most cases, get the monitor to display 80 columns legibly.

"RGB" is a very confusing title, though, because there are two basic types of RGB monitors, but you have to read the fine print to find out whether the monitor you're considering will work with your computer.

**RGBI (or Digital RGB):** THIS is the type of monitor that will work with your C-128. In addition to the red, blue, and green signals, the computer also sends a signal to the monitor controlling the Intensity or brightness of the colors. This monitor will give you an 80 column display with your C-128. You will have to use a special cable to connect it to the computer, using the RGBI port on the back of the computer (the jack that looks like the opposite end of the joystick port).

**ANALOG RGB:** This type of RGB monitor will NOT work with the C-128; it is the kind of monitor that works best with the Amiga, since it provides a greater range of colors. The RGBI signal of your C-128 is a foreign animal to the C-128, so once you see the word "analog" in the text, you usually can pass it by.

**COMBINATION TV/MONITOR:** Just what the name says, it gives you the chance to watch The Monkees while calculating a spreadsheet with Multiplan...all you have to do is press a switch to toggle between the two. Generally, though, you give up a few things to get all-in-one, and usually it's the resolution.

**TEXT SWITCH:** This type of monitor has a nifty little switch that usually allows you to switch between a color RGBI screen to a monochrome one (usually a "green screen"). Many people like the Text Switch as they find a green screen easier to use over a long period of time.

#### Kind Of Pictures:

**RESOLUTION:** Also called Graphics Resolution, this is the measure of the number of dots (or pixels) that the monitor can display on the screen. For example: 640 x 200 means that the monitor can display 640 pixels across and 200 down. The higher your monitor resolution is, the crisper the picture you'll receive. Resolution (sometimes referred to as "lines at center") also affects the amount of text you can display on the screen. Low resolution monitors are seldom able to display 80 columns.

**DOT PITCH:** This is a measure, in millimeters, of how closely the dots or pixels are placed on the screen to form an image or character. Zero is the goal; the closer the dot pitch is to zero, the better the display.

**BANDWIDTH:** (or Video Bandwidth) This is the measure of the amount of information that is contained in the video signal the monitor can process. With a higher bandwidth (measured in megahertz or MHZ.), you get a better picture.

#### What's In It For Me?

Now that we've gotten the terminology out of the way, let's take a look at the monitors themselves. I've taken the information supplied by the manufacturers or their distributors for each of the monitors in the chart.

The monitors reviewed here are ones that were either submitted by the manufacturer for review, or have been personally used or reviewed by yours truly.

## A CRITIC GIVES THE MONITORS THE SCREEN TEST

This is the point in the article where I turn on the Siskel and Ebert emulation mode. I have personally viewed each of the monitors in the capsule reviews in 40 column graphics mode, 80 column text mode and 80 column graphics mode. Tests were done in normal office (fluorescent) lighting, using demo software from Commodore. Now, the results (ratings from one to five stars):

**THOMSON CM36512 VIC:** This is one of the first non-Commodore RGBI/Composite monitors that I've seen that actually tells in its owner's manual how to connect it to a C-128! While some people seem to favor the 1902 display over this monitor, I found the screen EASY to read in 40 and 80 columns. In addition, the monitor uses STANDARD IBM-STYLE RGBI cables, unlike most of the others...cables that are available in reasonable lengths. This monitor is a good RGBI buy...while they're available at the current prices.  
RATED: \* \* \* \*

**TEKNIKA MJ-22:** You probably have read something about this monitor, even though you may have never seen it. It was the first model for the Commodore C1902 monitor. Commodore switched to a cheaper model from North American Philips (Magnavox) and tacked the "A" suffix to it. This monitor has a good display, nice outward appearance, is easy to read but has one big drawback: you have to buy your cables from Teknika, since it has non-standard cable connections. This is VERY frustrating as soon as you learn that the cable isn't long enough for your needs! These are still available and are a super buy right now!  
RATED: \* \* \* +

**AMDEK Color 500:** Get this puppy while you can! Amdak has discontinued this monitor, vacating its seat in the mass merchandise competition to play a bigger part in selling other monitors to IBM users for their newly-found graphics programs. The Color 500 has a GREAT display, is easy to read, and with the polarizer on the screen, takes away all the glare. The trouble is, they are in very short supply...and probably command a high price. If you want a quality monitor, don't be afraid of this one! It's got all the clarity of a 1902A and then some! I rate this a steal if you can get it under \$280.00! RATED: \* \* \* \* +

**COMMODORE C1902:** This is the ORIGINAL C1902, not the ones you can buy in the stores now...that one's the C1902A and its review follows. The C1902 was manufactured by Teknika and did not have a text switch...but most of its users find the display much easier to read than the C1902A. Like the Teknika MJ-22, though, the C1902 uses non-standard cables, and you can't go more than two feet from the computer to the monitor (unless you're good at splicing cables!). Since Commodore discontinued this monitor, I doubt you'll see one on any store shelves...but many C-128 users would give their left arm AND their C1902A for one!  
RATED: \* \* \*

**COMMODORE C1902A:** Commodore switched to this version, with an 80 column green screen mode, five months after it began selling the C-128 and the original C1902. This version, while promising 640x200 resolution, seems to pale a bit in comparison with other monitors. Generally, though, the display is good, but it also uses short, non-standard cables to connect to the

C-128, which detracts from its rating. In addition, the monitor sits fairly close to the table or computer stand...the screen is only an inch from the bottom of the monitor, which makes it very hard to sit it directly behind the C-128 and see all the display. It has a small "foot" or tilt stand built into the bottom, but I found that tilting the monitor upward with that stand only increased the glare from the office lights. This monitor is a good value; its price is much less than equivalent monitors. RATED: \* \* \* +

**SAKATA SC-150:** Here's another monitor that doesn't use any standardized type of RGBI connection! The display is VERY good, though, once you either buy a cable or figure the thing out. 80 column display is excellent and the model I tested had very brilliant colors. This is another of those "hurry up and buy them while they last" monitors, as Sakata isn't giving any guarantees that this model will continue.  
RATED: \* \* \* \* +

**PANASONIC CTF1495M:** Pity poor Panasonic! They at one time were stuck with this monitor in their warehouses...and tried to convince C-128 dealers to buy it. Now, the monitor has a nice resolution and I really liked the removable tinted glass screen in the front...but the cables! These would have to cost the consumer about \$30 total...and only one company in Japan makes the plugs for the cables! (Honest-ask the folks at Data Share!) This would be a good monitor to fit in with your stereo system, VCR, etc if it's all in the same area...it looks like a system piece, instead of the hacker's traditional monitor. If they dropped the price of the cables about \$20 and dropped the monitor's suggested retail price to the level of the C1902A, it would be a great buy. Right now, it's a bit overpriced for what you get. And I understand they still have them in the warehouse at Panasonic. RATED: \* \* +

**MAGNAVOX 8CM 505:** DON'T BUY THIS ONE!!! If you want a monitor that'll run in 80 column mode, don't pick this one up just because it looks nice on the dealer's shelf. This monitor is NOT capable of readable 80 column video in RGBI mode!! It took a lot of arm twisting to get the Magnavox representative to admit this, but it's true! PLEASE LOOK AT THE MAGNAVOX MONITORS CAREFULLY!!! Some unscrupulous dealers have been selling these monitors using the specs from the 8CM 515 and they are WORLDS APART! It was a mistake for Magnavox to come out with this model...and you should look at the Magnavox monitors closely so you don't make a mistake and buy it! RATED: DON'T BUY!

**MAGNAVOX 8CM 515:** Now THIS is the Magnavox monitor to look at! This monitor is the Magnavox version of the C1902A that is on store shelves today. The main difference between the two is that this monitor will not only work for your C-128...but can work in RGB analog, on computers like the Amiga. My comments about the display and the layout of the C1902A follow, only I found the sample of this monitor that I tested looked much more brilliant in color than the Commodore monitor. These are more expensive than the C1902A, but worth it in the display and in the TWO YEAR PARTS AND LABOR WARRANTY!  
RATED: \* \* \* \* +

For further technical information, see the chart on the next page.

# Technical Specifications for various Monitors

Model	CRT Size (in)	Dot Pitch (mm)	Band- width (mhz)	Input Signals			Resolution (pixels)	Dis- play	Text Sw.?
				RGBI	Comp.	Separate			
-----									
<b>Color Monitors</b>									
-----									
Thomson	CM36342SI								
	CM36382SI	14	0.43	12	x	-	x	640x240	80x25 N
	CM31481VI	12	0.48	14	x	x	x	560x240	80x25 N
	CM36512VI	14	0.51	12	x	x	x	560x240	80x25 Y
	CM31311SI	12	0.31	14	x	-	x	690x240	80x25 N
Teknika	MJ-22	13	0.51	18	x	x	x	506x240	80x25 N
	MJ-305	13	n/a	16	x	-	-	640x240	80x25 N
Amdek	Color 600	13	0.43	18	x	-	-	640x240	80x25 N
	Color 500	13	0.43	18	x	x	x	640x240	80x25 Y
Commodore	C1902(A)	13	0.42	15	x	x	x	640x200	80x25 Y*
Zenith	ZVM-1330	13	0.43	20	x	x	-	640x240	80x25 N
Sakata	SC-150	13	0.42	15	x	x	-	640x200	80x25 Y
Panasonic	CTF1495M	14	n/a	16	x	-	x	580x240	80x25 Y
Magnavox	8CM 515	14	0.42	15	x	x	-	640x200	80x25 Y
	8CM 505	14	n/a	12	x	x	-	390x200	40x25 Y
-----									
<b>Monochrome Monitors</b>									
-----									
Magnavox	7B613 (amber)								
	7BM623 (green)	13	0.51	18				1000 lines	80x25
Thomson	VM3102 VG	12	n/a	35				1000 lines	80x25
Sakata	SA1000	12	n/a	18				900x800	80x25
Amdek	310A	12	n/a	18				960x800	80x25
Samsung	MD1255	12	n/a	16				700x200	80x25

Data provided by the manufacturers.  
Current suggested list prices not available.

## BEYOND THE CHARTS - Which Monitor Is The Best?

Well...now comes the final test...which of the monitor is REALLY the best for you. You've looked at all the figures and facts...now it's time to put them to the practical test and pick that ideal monitor.

First of all, let me warn you: if you are looking for a cheaper monitor than Commodore's 1902A with the same features, you'd better shop now. There aren't many of these RGBI/Composite/Text monitors out there right now, and my check of the manufacturers indicates that most of them are just about to discontinue their monitors of this type. This means you're going to be left with the 1902A or its descendants if you wait too long. Those that remain, like much of the electronics coming from Japan, will be going up in price (Thomson has already announced a 20 percent price increase to its dealers).

You might think about foregoing a color monitor for 80 column work, since few programs really use color graphics in 80 column 128 mode...and buy a monochrome or green screen monitor. They are fairly inexpensive (\$100 or less) and are easy to hook up to the C-128.

Another alternative would be to purchase TWO monitors...buying an RGBI monitor for 80 column mode and getting an inexpensive color monitor for 40 columns. In theory this sounds great, but most of the RGBI monitors out there aren't mass merchandise products, and dealers want from \$350 to \$500 for one (you'll get great graphics resolution, though!)...to which you must add another \$160 for a color monitor for 40 columns (or just think about using the old TV set!).

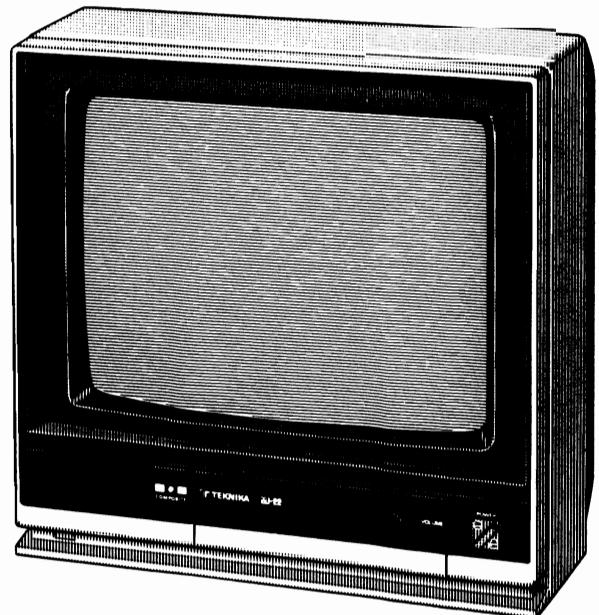
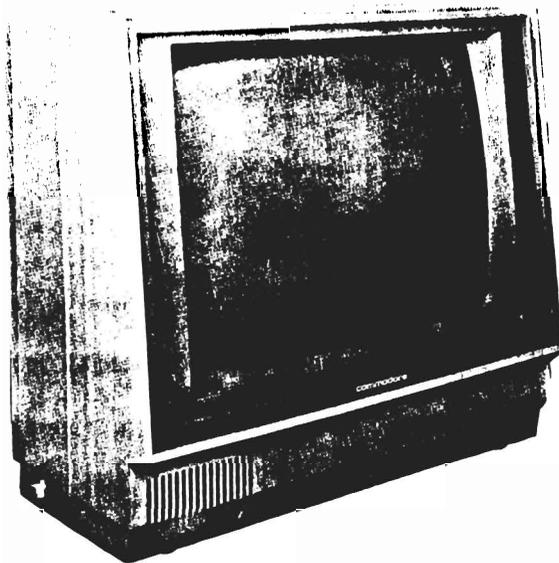
Commodore itself may have an answer for you as well. Newly-announced at the Summer Consumer Electronics Show in Chicago was the 1802 monitor (not to be confused with the C1802 some of you may have bought for your C64s!-I know, I was confused about the name, too!). This little dandy is publicized as being for the new 64C computer...the "little brother" to the C-128.

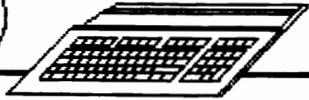
Someone in Commodore marketing has us cheapskate C-128 users in mind though...because this new monitor will not only be a luma/chroma color monitor for 40 column video from the C-128 or 64...it will also have an 80 column greenscreen mode! I don't have the price figures for this monitor, but if positioned at \$200 or in that area, it would be a steal for C-128 users!

Armed with these figures and notes, you can look at the monitor selection objectively at first to rule out the ones that don't fit your factual needs...then pick the one that looks the best to you. Check it out, if possible, at different viewing angles...and with several demos...and don't be afraid to be picky. All the "K"s of RAM in the world won't be any good to you in the computer if you can't read the output.

One other thing to pay attention to for the long haul: WARRANTY. Make sure there's an easy way to get your monitor fixed if it goes haywire...and shop for the longest warranty possible (for example, Thomson has a one-year warranty; Commodore only has 90 days).

Now - if it passes all these tests and you really like it...buy it!!! Or better yet, get your rich uncle to buy it for you (then tell him there's a starving computer journalist who needs one, too!).





The summer months are traditionally a very slow time in the computer industry, especially here in the northern climes where pleasant weather is a luxury that fades all too fast. But now is a very important time for a certain segment of the population to think about computers, namely: PARENTS, especially parents of school aged children. Many educators warn parents not to let children's minds go "uneducated over the summer". They point out that a child needs to be constantly challenged creatively and intellectually throughout the summer months so the learning process is not retarded. Personal computers, and the C-128 in particular offer a unique opportunity for children to exercise their minds while still preserving freedom and flexibility (the very essence of summer).

### YOU CAN'T BANG THEM OVER THE HEAD

Of course, as most parents can attest, children have an annoying tendency to reject those things which parents label as "intellectually stimulating", "educationally rewarding", and "conducive for growth and development" for those things that are FUN! (don't we all). Fortunately, computers are flexible enough to allow your child to be entertained and enriched at the same. However, just having the computer or even having a computer with entertaining educational software is not enough. This is because computers like toys are simply tools which extend the child's mind, and like most toys, computers will soon become boring to the child unless the right environment is provided for the child to interact with the computer. The following are the key elements in providing an environment conducive to an effective learning experience with the computer for kids.

1. Interesting subject matter: The old cliché about leading a horse to water holds true with children and computers as well. You can plop the child down in front of the computer, provide him/her with software, but you cannot make the child learn unless he/she wants to. Central to sparking the interest and imagination of a child, and as a result kindling the desire to learn is an interesting course of study or inquiry. Often this can be accomplished simply by choosing a subject that the child is already interested in. This is easy if the child is interested in something that is directly related to the computer, such as programming; however this may not always be the case. In instances where there is no direct correlation between the subject of choice and computers in general or there is no software designed to aid in learning about the subject, then the computer must take the role of an outside information processor. Through the use of online telecommunication services such as Quantum Link, CompuServe, Genie, Delphi, and the Electronic University you and your child can gather information on just about any subject without even leaving your home. The computer can also be an invaluable tool for expression of your child's thoughts on any subject. Encourage your child to write about the subject of their interest using a word processor (like Paperback Writer or Paperclip) or draw pictures about the subject using a graphics editor (like Geopaint or Doodle). Encouraging children to express themselves either through writing or drawing on the computer will enhance the child's familiarity with the computer in addition to improving the child's writing and spatial skills while still enjoying the freedom of pursuing the subject of their choice.

2. Encouragement and attention: Computers are not and never should be mistaken as electronic babysitters. As I stated before, plopping a child down in front of computer and commanding him/her to learn probably will not be very effective especially if you substitute quality interaction between you and your child for time on the computer. Computers don't make good conversation, smile, encourage, love or comfort, things which your child needs to foster an effective learning environment. So it is crucial that you as a parent do not "make yourself scarce" every time your child sits down at the computer, but instead show an interest in what they are doing and involve yourself in the actual learning process. In this way the computer can serve as a beneficial tool for bring you and your child closer together instead of isolating you from your child.

3. Avoid over-expectations: Perhaps the worst thing a parent can do with their child is place excessive demands on their child, this is especially true with computers. Recently I have met several parents who felt compelled to purchase a computer for their kids because they felt that if they did not, their kids would suffer an educational disadvantage. When I inquired what they were going to do if their child did not have an equal level of ambition for using computers as their parents did for purchasing one, one parent replied, "Well I guess I will just have to force him to use the computer for his own good." Reiterating what I have said before, it is extremely difficult to compel a child to use a computer or learn by using a computer unless he or she has a direct interest in doing so. This is especially true when you add the increased economic pressure placed on both you and the child when you rationalize the purchase of a computer as being a tool for your kids to USE! I recommend that parents DO NOT PURCHASE A COMPUTER SPECIFICALLY BECAUSE THEY FEEL THAT IT WOULD BE GOOD FOR THE CHILD TO HAVE EXPOSURE TO COMPUTERS AT HOME, unless the child demonstrates a genuine interest in computers prior to the purchase. Of course many of us already have computers for our own purposes, but even so it is amazingly easy for us as parents to place undue pressure on our children to perform on their computers. Perhaps the best thing to keep in mind when encouraging kids to use the computer is the realization that not everyone is cut out to be a "computer whiz" and that the development of good computer skills takes time and experimentation. So let your children experiment and progress at their own rate and avoid heaping too many expectations upon them.

4. Explain and establish good habits: Of course there are certain areas where you should expect your kids to perform. Perhaps the most important area is care and maintenance of the computer. Let's face it: computers are expensive investments and they are not necessarily child-proof. You should explain and enforce certain rules about behavior around the computer. Here are some suggestions:

A. No "rough-housing" around the computer, because it is very easy to get tangled in or trip over the myriad of cables and connections that are essential to the computer's operation. (you as a parent probably ought to "bury" these connections as best as possible to avoid accidents which could damage you computer as well as injure your child.)

B. Be strict about eating and drinking around the computer. Nothing can be more frustrating than a shorted-out or gummed-up keyboard instigated by the wanton flow of kool-aid which just happens to escape from the glass. So be careful to establish a strict policy about eating and drinking around the computer and stick to it (nothing is more confusing to a child than a rule that's bent to often)

C. Make specific rules about the care and handling of delicate materials such as floppy disks. Teach your child how to handle and use items like floppy disks, ROM cartridges, dongle keys etc. Make sure they are also aware that these items should be put away after each time they are used.

D. Finally teach your children to let you know if something is not working properly or if they are not sure what they are doing.

5. Too much of even a good thing...: Computers can be extremely addictive, especially for kids. And even if a child is learning and enjoying himself with the computer, it is unhealthy for them to spend an excessive amount of time with the computer. It is difficult to gauge how much time is "excessive" but keep in mind that the computer should not preclude or become a substitute for interaction with other children or for physical activity. Make sure your child seeks other activities outside of computers or shares his/her computer experiences with others.

To help get you started thinking how your C-128 can be used to help educate your child, here are some ideas:

1) Write a story building program for younger children in which randomly chosen sentences (by the computer) are strung together to form short

stories. Children could then be asked questions on their comprehension and grammar use.

2) Music education on the C-128. This can be anything from testing basic musical knowledge about the musical staff and notes to music composition with BASIC 7.0's SOUND and PLAY commands.

3) Mathematical drilling on addition, subtraction, multiplication, and division skills, metric conversion, the solving of polynomial equations randomly queried by the computer, with the student typing the correct response. These are good practice for the student to improve his skills.

4) High school students often take probability and statistic classes during the regular school year. A good way to practice these skills is to help your child develop a program that will compute these kinds of statistics for a hobby they are interested in, like a sports team. Plus the writing of programs by students for the computation of complex statistics such as standard deviation, normal distribution, Chi square distributions, and linear regression often give a student special insight and understanding into the computation and uses of these statistics which is not normally gained from within the classroom.

5) Spelling and proof-reading and grammatical syntax can often be improved greatly through the use of a word processor. For those students who are particularly lacking in these skills, try typing up several documents purposely making spelling, grammatical, and punctuation errors and have your child correct them for you. You will find that this kind of practice will really spill over to improve your child's writing and syntax.

**C 128 and CP/M  
CONSULTING**

**CUSTOM PROGRAMMING**

**SUPERBASE  
and  
MULTIPLAN**

**BOUNCING  
DOG  
SOFTWARE**



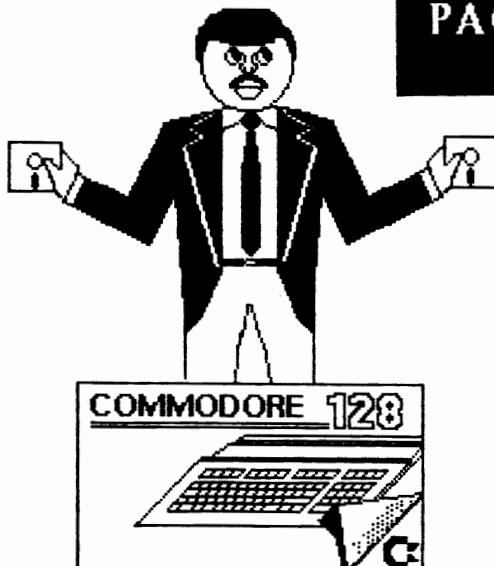
**CALL  
(612) 729 7662**

# 1/2 PRICE SALE!!!

While quantities last!  
All packages factory sealed!

<u>TITLE</u>	<u>LIST</u>	<u>NOW</u>
MATRIX (Progressive Peripherals).....	\$59.95	\$29.95
THE BLACK BOOK OF C-128 (Valuesoft).....	\$15.95	\$ 7.95
SIMONS' BASIC (Commodore).....	\$49.95	\$21.99
LOGIC WORKOUT (Avante-Garde).....	\$34.95	\$10.99
KARATE CHAMP (Data East).....	\$34.95	\$15.99
EASYMAIL 64 (Commodore).....	\$21.95	\$10.95
STAR RANK BOXING (Gamestar).....	\$29.95	\$14.95
SARGON II (Hayden).....	\$19.95	\$ 9.95
DEADLINE (Commodore/Infocom).....	\$39.95	\$17.99
BOP'N WRESTLE (Mindscape).....	\$29.95	\$14.95
HALLEY PROJECT (Mindscape).....	\$29.95	\$14.95
ULTIMA IV (Origin System).....	\$59.95	\$29.95
C-64 GRAPHICS & SOUND (Sams).....	\$19.95	\$ 8.99
FLIGHT SIMULATOR II (Sublogic).....	\$49.95	\$24.95
PHANTASIE (SSI).....	\$39.95	\$19.95

PLUS OVER 60 MORE C-64  
PACKAGES AT \$9.99 OR  
LESS!!!



COMPUTER STUFF  
4606 CHICAGO SO.  
MPLS MN 55407

(612) 825-2674

Computer Stuff is the Twin Cities leader in Commodore hardware and software. We team our knowledgeable staff with low prices to give you an unbeatable combination of value and service. Stop by our store and find out why, if you are looking for Commodore stuff you should be looking at Computer Stuff.



**Bault** 24pt 12pt  
**Bubble** 24pt  
**Bowditch** 24pt 12pt  
**BRENNENS** 18pt  
**Channing** 24pt 16pt 14pt  
**Durant** 24pt 18pt 12pt 10pt  
**Elmwood** 36pt 18pt  
 ‡↔≡≈∴ 18ll. (Evans)  
**Fort Knox** 24pt  
**Harmon** 24pt 10pt  
**Hearst** 24pt  
**La Conte** 18pt 12pt  
**Mykonos** 24pt 12pt  
**Ormand** 24pt 12pt  
**Puennam** 24pt 12pt  
**STADIUM** 24PT  
**Superb** 24pt  
**Telegraph** 18pt  
**Tilden** 24pt 12pt  
**Tolman** 24pt 12pt

Berkeley Softworks 9pt  
**California** 18pt 14pt 12pt 10pt  
**Cory** 24pt 12pt  
**Dwinelle** 18pt  
**Roma** 24pt 18pt 12pt 9pt  
**University** 24pt 18pt 14pt 12pt 10pt

In our last issue we featured an evaluation of GEOS by Berkeley Softworks. I was really impressed with GEOS, because it offers Commodore computer owners the power and user interface concepts that were previously only available in much more expensive machines, and does so for a reasonably low price. Our evaluation was based upon the 1.0 version of GEOS. Since that time we have received the upgraded 1.2 version. The 1.2 version is the version currently being sold by retailers and also is packaged with the C-64c.

The most noticeable difference between the 1.0 and the 1.2 release is color. The 1.2 version now supports color in GEOPAINT so you can create multicolor graphics (under the 8x8 pixel color mixing limitations of the C-64 and C-128's VIC chip). While on the surface this addition may seem significant we have found the addition of color to be more of a nuisance than a benefit. GEOPAINT is designed primarily as a pagemaking utility rather than a graphics screen editor and the colorization of GEOPAINT is really a mute point for most users since they do not have access to color printers capable of printing their creations. We tend to shut the color off (a provided option) when doing our GEOPAINT work because this provides better contrast and a clearer impression of how things are going to appear on a standard dot matrix printer.

However, this is not to suggest that the 1.2 version is not a vast improvement over our pre-release version. There have been many enhancements which have made the system much easier to work with. For instance, your color and mouse preferences are now implemented upon opening the desktop. Also the text and photo managers have been vastly improved and now facilitate "named" libraries for keeping text and graphics "scraps" better organized. But perhaps the biggest improvement is the superior facilities for two disk drives. These enhancements allow you to search for items on other disks without having to exit to the desktop. In fact, with two disk drives you can even open a GEOPAINT or GEOWRITE file on another disk and extract sections for importation into a file on your currently active drive within the application, thus saving many tedious desktop sections.

GEONEWS - We concluded last issue's GEOS evaluation by stating that C-128 owners who did not have an immediate need for GEOS might want to hold off in lieu of the upcoming C-128 version. That recommendation left many C-128 owners wrestling with a decision of whether to buy or wait. Well further complicating this decision (or perhaps making it easier) is the news that Berkeley Softworks is going to offer C-128 owners who buy the C-64 mode version of GEOS the option to upgrade to the C-128 version for a nominal fee (we hope to have complete details in our next issue about the upgrade as well as the specs on the C-128 version...stay tuned). We have also learned that Berkeley and Bantam books will soon be marketing the "GEOS Technical Reference Manual" for those interested in using or modifying the GEOS system for their own applications. Also soon to be marketed is GEOS FONT PACK #1 which gives you an additional 20 fonts for use with your GEOS applications. These fonts and their size options are presented for you on the left side of this page (and throughout this issue). As you can see they really expand your capabilities. Look for more of the expanding GEOS story in our next issue!

Technolust: The overwhelming desire, bordering on obsession, to acquire electronic gadgetry, such as personal computers and peripherals, stereos, video equipment etc.

Okay, I'll admit it. I suffer from an acute case of technolust. I like gadgets, and gadgets to improve my gadgets. It probably started long ago with my first digital watch and has progressed uncontrolled ever since. I have often told my wife, it could be worse, I could lust after other things, that are far more destructive (drugs, gambling, illicit sex etc.) Computers can very easily breed technolust. For me, my computer technolust began with the my first personal computer, a Vic-20. The Vic-20 was a very good inducer of technolust because, while it offered a lot at the time for the money, it lacked an awful lot. For a few weeks I was satisfied with the Vic's "whopping" 5k of random access memory, but as I progressed I soon found technolust setting in and I longed for more, so first came a disk drive, then an added 16k of random access memory, and then another 8k and an eighty column board, and then a modem and a second disk drive, and so on...through the C-64 all the way up to our present day C-128. I must admit the C-128 has kept me content in its own right for a lot longer than most of my other "technotoys" probably because the C-128 comes with so much (80 column capability, 128k of RAM, an excellent implementation of BASIC etc.) But now technolust has set in again and my eyes and my many times depleted wallet have turned to yet another piece of hardware, the 1700/1750 RAM Expansion for the C-128.

Now the frugal amongst you might demand some kind of logical reasoning for the purchase of such a device (my wife sure did) and to be honest there is none. And as my wife so eloquently pointed out there is no "PRACTICAL" reason to acquire ram expansion for the C-128. In fact, she presented me with a rather large laundry list of reasons why I should not buy a RAM expansion. Her reasoning went something like this:

First, the memory is not Direct Access memory. This means that when you add your RAM expansion to your C-128 you are not really increasing the amount of internal memory to the system, that is memory that is DIRECTLY available for my BASIC or machine language programs. This has to do with the fact that the C-128 is still an eight-bit micro which in reality can only address 64k at any given instant. But then you ask, how can my C-128 be a true 128k machine? Well rest assured it is, but not in the conventional sense. The whiz kids at Commodore thought up a rather brilliant scheme that allows the C-128's operating system to switch between two 64k banks of random access memory plus the system's read only memory very quickly, allowing the C-128 to truly incorporate 128k of RAM though technically not all at once (this does mean that there are a few peculiar quirks about programming the C-128, but in practice it adds a great deal of power and flexibility to your system). Because of speed and certain other limitations inherent in the C-128's 8510 microprocessor the C-128 does not use the same internal bank switching procedure for addressing the memory within the RAM expansion module, but instead relies on an external switching technique (more on this later) to "trade" and "replace" certain areas of the C-128's internal RAM.

Second, my wife stressed the fact that I have yet to write a program which as she put it, "totally exhausts" the capabilities of my C-128 under its current configuration. Here again she is correct, although I have done a great deal of programming on the C-128 I have yet to really tap its absolute "full" potential (although, to be truthful, I believe that I nor anyone else in reality has tapped the full potential of any micro, even my old Vic or my trusty C-64).

Last, she quite fervently points out that all of the excellent productivity software for the C-128 (like Superbase, Pocket Writer, Multiplan, et al.) function like a champ in my C-128's current configuration and as of this writing none of them have the capability to address the ram expansion (though I have been assured by several sources that there are revisions in the works...stay tuned).

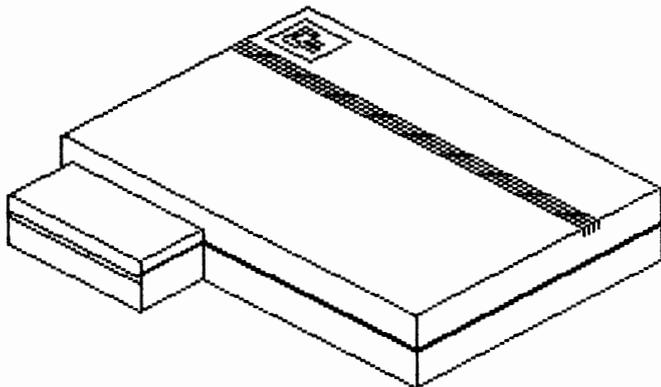
"Okay, Okay already", I said picking up a white shirt and waving it symbolically as a gesture of surrender. So why then, you might ask did I risk divorce and financial ruin and pick up a ram expansion? Well I justified it to my wife (fully expecting to be shown the door) by suggesting that it was a must for Twin Cities 128 (I was not lying), and that it might help save Commodore (stretching a bit), and that it is very important for me to retain my pioneer spirit in the world of computers (really stretching it), and most of all I told her that my SICK mind saw a great deal of potential for the device (the absolute truth, technolust strikes again!). She grumbled a few obscenities and let me hide in the computer room to play with my new toy.

It turns out that both my wife and I were correct about the RAM expansion. My wife was correct in her assertion that at this time the RAM expansion does not really have a great deal of practical value especially given the lack of software that is currently available to take advantage of the RAM expansion's potential. But I also was correct in my belief that the RAM expansion does indeed hold a great deal of potential, especially for those willing to take the time to design applications which exploit its talents.

Programming the RAM expansion is not really difficult if you keep in mind that the RAM expansion is not a direct memory access device (as stated earlier) but instead is really a large external storage buffer. The RAM expansion uses a special chip designed by Commodore called the RAMExpansion Controller (REC) to transfer or trade the memory contents between portions of C-128's internal RAM memory and the external memory in the RAM expansion module. These manipulations are accomplished in BASIC 7.0 through the use of the STASH, FETCH, and SWAP commands or from assembly language through the DMACALL Kernal routine and manipulation of the MMU's configuration register. The results are breathtaking, the REC is capable of transferring memory at an incredible 1 megabyte per second rate (however, the maximum you are allowed to transfer is 64k at any given instant). This kind of speed opens up a whole new world for the C-128, for example, an entire graphic screen (8k) can be animated at speed up to 128 frames per second (with the 512k expander you could store up to 64 separate screens, with the 128k expander you could store 16 screens) allowing real time animation of

the sort previously only available on machines like the Amiga. Combine these capabilities with C-128's sprite facilities (consider sprites moving across rapidly changing backgrounds) and I think we may very well see a whole new generation of game and graphics software for our little 8 bit wonders. Of course there are other areas where the RAM expansion's speed and flexibility create revolutionary potential for the C-128, consider creating BASIC programs with program and/or variable overlays (through the use of the C-128's POINTER command) that are appended immediately into the executable code. Or consider a disk copying utility which copies entire 1571 formatted disks in ONE pass through the use of the 512k expander. However, at this time, all of the programming for such applications would be left up to you, but with this kind of power at hand, it more than likely will not be very long before you see commercial packages which feature RAM expander options (we know of a few already which are in the works: GEOS 128, Paperclip II, Pocketwriter 128 (upgrade)). Plus there is always CP/M which handles the RAM expansion like a super fast disk drive (just PIP the files you want access frequently to drive M: at the beginning of your session).

So what is my conclusion about this product? I like it a lot! But then again I suffer from a severe case technolust. Should you buy one? Well that depends upon YOU. If you are a programmer/hacker/potential developer interested in exploring new areas to exploit your C-128 then by all means, go out and get one of these babies, YOU WILL NOT BE DISAPPOINTED (at least not until the bill comes through or your spouse files for divorce). If you are a person who is strictly a non-programmer/applications user I recommend you hold off on the RAM expansion until we start seeing commercial packages designed to take advantage of this product, but do keep it in mind, because this product really makes the C-128 zing!



*Go 512k the  
inexpensive way!*

**Upgraded 1700 (512k)**

**Fully tested, featuring quality  
socketed dynamic RAMs \$194.95**

**Upgrade Kit**

*For Do-it-yourself types*

**includes: tested RAMs,  
sockets, and complete  
instructions \$ 79.95**

**Vision  
Computers**

826 18th Street, Des Moines IA, 50314

Need more Info? Write or call our BBS  
(515) 282-1934 6pm to 8am Central

# Ram Charge Your Ram Expander

upgrade your 1700 to 512K



Got a soldering iron, some solder and good eyes? Basically, that's all it takes to transform the C1700 RAM 128K RAM expansion module into a full-fledged 512K RAM cartridge.

You see, someone in the engineering department at Commodore either was thinking about us penny-pinching users, or decided to save the company money...but the controller and the PC board for the C1700 (the 128K expansion cartridge) for the 128 is the same as the C1750 (the 512K expansion cartridge) that has a retail price almost double that of the C1700. The only REAL change that you need to make is to change the 64K RAM chips in the C1700 to 256K chips, and some other modifications we'll talk about.

The new RAM chips, when ordered from a reputable company, will cost you from \$2.75-3.75 each. You will want to shop for the best quality chips for your money, as cheap RAM chips can cause heartaches later on if they don't work. It's also wise not to mix and match batches of RAM chips. Ask an IBM user who's done that on his PC about the troubles you can expect - they can be pretty bad! I recommend the use of IC sockets, since they are fairly cheap and mean that you don't have to apply any heat to the new RAM chips, thus you avoid having to unsolder and replace any damaged or defective ones.

There are a couple of warnings in this operation, though. First, the minute that you open the case of the C1700, you are voiding the warranty. That means any changes you make are FINAL. If you do the work and botch it up, plan on spending some bucks to get a qualified technician to put it back together again. Second, since this upgrade involves an extensive amount of soldering and desoldering, knowing how to remove ICs and

re-solder them properly is a must. [EDITOR'S NOTE: THIS MODIFICATION SHOULD NOT BE ATTEMPTED BY ANYONE WHO IS NOT EXPERIENCED WITH SOLDERING ESPECIALLY VERY INTRICATE WORK WITH PC BOARDS. TWIN CITIES 128 NOR GARY WILL NOT BE RESPONSIBLE FOR ANY DAMAGES THAT MAY RESULT FROM THIS MODIFICATION] Cold solder joints mean trouble, if not now then in the near future. Plus, too much heat in the installation process or a little static electricity is all it takes to zap a RAM chip into oblivion.

## A RECIPE FOR A HAPPY RAM

### Ingredients:

- 1-C1700 RAM Expander
- 16-256K Dynamic RAM chips, either 150ns or 120ns 16-16-pin I.C. sockets (HIGHLY RECOMMENDED)
- Pencil-type soldering iron
- Desoldering tool (or desoldering wick)
- Resin-core solder
- Sharp knife

First you must open the C1700 and extract the printed circuit board. The C1700 is incredibly easy to open since everything either snaps together or slides. In the case of the outside case, a little tug on each side should open the case. The inside metal box that encloses the PC board is a one-piece board that sort of snaps together, and will probably be a two-piece item by the time you are finished, since the corners are about as fragile as the ones I made in high school shop class. (Be careful as you take it apart so you don't end up with more pieces!!)

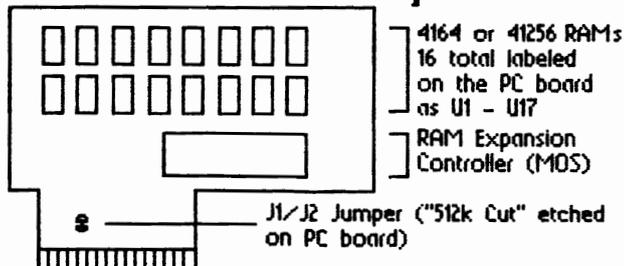
Now look at the printed circuit board. You'll see a large IC with the letters "MOS" on it at the top part of the board. DO NOT TOUCH THIS CHIP OR EXPOSE IT TO STATIC ELECTRICITY OR HEAT, as it is EXTREMELY sensitive to heat and static and, since it is the controller for the RAM expander and is only available from Commodore (which owns the manufacturer, MOS), if it is damaged, you are sunk.

Below the controller chip are 16 64K RAM chips, soldered into the board, labeled U1 through U17 on the board. These are the chips to replace. In the front part of the PC board you will see two areas marked J1 and J2 (near the edge connector). J1 must be cut to finish the RAM expansion job AFTER you replace the chips.

Before you begin the transplant operation, make either a mental or a hard copy note of the way the RAM chips sit on the PC board. You will notice that they have a little indentation on one end. Make sure that you install the chips so that the new 256K chips have THEIR marker facing the same way. If not, the expansion WON'T work!!

With a soldering iron, NOT A SOLDERING GUN, remove all 16 of the RAM chips from the printed circuit board [EDITOR'S NOTE: The desoldering job can be made easier if you cut the 1700's 4164 rams away from their pins at their tops with a wire cutter giving you a little more room to work with. of course this will ruin the 4164s but you are not going to need them anyway. AGAIN BE VERY CAREFUL TO AVOID TOUCHING THE RAM EXPANSION CONTROLLER CHIP!], making sure not to scatter any of the solder to the rest of the board or to accidentally desolder any of the other parts on the board.

## General layout of the interior of the 1700/1750 Ram Expander



## An Examination of BBS Software

by Todd Madson

Using a toothpick, clean all of the excess solder out of the holes that the RAM chips were removed from, and with a toothbrush (an old one, I hope!) brush any other solder from the PC board.

Now you can solder in the IC sockets, making sure that you do not over-solder each connection. Make sure each solder joint is shiny - if it is dull, you have created the deadly cold solder joint and not only will your expansion unit not work properly, but my electronics teacher may call you to scold you.

After the sockets are installed, snapping the 256K RAM chips into them is about the easiest part of the whole story. Again, make sure they are installed with the marking in the SAME direction as the 64K chips were! [EDITOR'S NOTE: When placing the new 41256 RAMs in the sockets, be very careful not to break the pins on the chips. If the pins are bent too wide for the sockets, very carefully squeeze the pins inward and gently press the chips into place. A chip insertion tool may be helpful. AND ABOVE ALL AVOID CONTACT AND GENERATION OF STATIC ELECTRICITY.]

With the knife, cut the thin solder trace between the two points on J1. You MUST make sure that the two sections of J1 do not have any solder connecting them, so make the cut clean. Otherwise all your soldering will be in vain.

Even the best surgeon must close up after he or she is done, so the next task is to carefully put the circuit board back into the shielding, then snap the board into the bottom section of the outer case and finally join the two halves of the outer casing. Almost done!

This is the pins-and-needles part: NOW you have to take the newly-created 512K expansion and install it in your 128. Next, run the RAM TEST program that came on the disk with the C1700. It should return a "SIZE=512K" message when it is running, and tell you that there were no errors while the program is running.

Should an error show up in one of the banks, the first thing to do is to re-check all of your solder connections. Make sure you don't have two adjoining pins of the RAM chips soldered together. If that doesn't help, you may have either damaged a RAM chip, or may have gotten a defective one (and, unlike your computer, you can't return those and get a new one, so just buy another!) If all this fails, you should be prepared to pack up the whole module and take it to a service technician for a complete re-make.

Again, please remember: any modifications to the RAM cartridge completely voids the warranty, so this operation is NOT for the novice in most cases. It's easy to damage the MOS chip and the RAM chips themselves, so if you do not know what you're doing, you can end up spending as much as you would have for a C1750.

One of the best sources for RAM chips if you don't have a local one is the COMPUTER SHOPPER magazine; there are a number of good companies who are advertising RAM chips at around \$2.75 each, and they are generally very quality-conscious.

So, if you've followed the instructions properly, you now have whipped up a successful RAM cartridge. Your next task is to write some programs using the cartridge that we can publish here in TC128! (Author exits, receiving pat on back from Managing Editor.)

In the Commodore world, one of the more increasingly popular uses for personal computers is that of running a Bulletin Board System (BBS). Some people are attracted by the potential glories of running a popular system, yet many systems go down before their first anniversary of operation because of system crashes, aggravation, loss of interest, and lack of finances. The first three problems are really attributable to the quality (or lack thereof) of the software. Bad BBS software can make the life of a potential sysop a nightmare - and Lord knows, Sysop's need all the help they can get!

This article will examine several BBS programs for the C-128. Most of these programs operate in the C-64 mode, though there is at least one for the C-128 mode with several forthcoming, and one planned for CP/M mode as well. We will examine some of the more popular packages in detail below:

Cnet 10.0 is a menu oriented system written by Ken Pletzer of Perspective Software, 1416 Walnut Ridge Circle, Canton MI 48187. Cnet retails for \$49.95, with updates available direct from the author for \$15. In the package, you receive 40+ pages of documentation and a program diskette. Cnet supports a wide variety of modems. It comes equipped to handle Commodore 1650 automodems and compatibles, the HesModem II, and the 1200 baud Commodore 1670. It also supports Hayes smartmodems and compatibles via the use of an RS232C interface, such as a Commodore VIC1011A or Omnitronix interface. Cnet is noteworthy in that it is one of the few BBS programs that supports 1200 BPS speed. Once CNET is configured and installed, the system awaits the first caller. At this time, large, yellow block numerals display the time in a manner similar to a digital clock. This is useful if you are watching the monitor from several feet away. Once a caller is connected to the system, these numbers disappear, and the window they were displayed in is used to display the callers' activity. When a new user calls, a blue-green block appears and tells you so. You also see the user's name, ID number, call number, access level, and more. Cnet supports multiple message bases, and the more disk drives you have, the better. The program also includes uploading and downloading using both XMODEM and PUNTER 10 formats. Other features include general text file libraries, a users list, the date and time, an option to change your password and terminal parameters, and a special, sysop only maintenance level. The message bases offer scanning, reading, and posting of messages and responses, and like most of the packages here will remember the number of the last message you read and on next call take up where you left off. Cnet offers lots of features for the price, however, I feel that cnet tends to me somewhat "menuey", as long menus with upper and lower text graphics borders are incredibly annoying at 300 baud. The program is quite nice at 1200 baud, though. This BBS program really needs a C-128 version to take advantage of all the extra features the C-128 can offer, especially increased speed of disk access. This BBS package may be worth your while to check out. Twin Cities 128 online, the official BBS of TC-128 is currently using the CNET 10.0 package. Call the original CNET BBS, Future World at (313)-981-4113 for further information, or write the above address.

Another BBS program is the HAL BBS. This C-64 mode program is released under the "Freeware"

concept. This means that, while the program is usually available on local BBS systems for download, the author requests a donation (\$30) if you use his program. The system supports PUNTER uploading and downloading, an EMAIL utility, and up to four message boards. It also comes with a HALSET configurer and some other utilities. I found the program a little rough around the edges, especially the somewhat childish message that gets printed when you log off, but not a bad program to investigate. If interested, write to Richard Buchanan : 3621 Wyoming #8 : Kansas City, MO : 64111, or call the original HAL BBS at (816)-931-7HAL.

The Comline 64 BBS program by Ray Bacon software, POB 2171, Clarksville TN 37042-2171 is another menu oriented system that has some of the typical features expected in a BBS, and some innovative features that I didn't expect at all. Inside the package are two diskettes and a warranty card. The first diskette is the program disk, and the second is the data disk, with Comline support programs on the reverse side. Version 6.6 supports 1650/1660 modems, and has a unique feature called a "Screen Saver", which blanks the screen during periods of inactivity to prevent CRT burn. This feature really is a must if you keep your CRT on for long periods of time. The system supports EMAIL, up and downloading in the PUNTER format, and a CHAT mode toggle so that if you are unavailable, a message will be printed to the caller saying so. The sysop page also has a built in terminal emulator so that you can call out and examine other BBS' without taking the system down. I'd like to see this feature in other BBS programs. The system also has a local mode, as do the other BBS programs listed in this feature. This allows you to log into your BBS as if you were an outside caller. The Comline 64 program has a 90 day warranty and retails for \$49.95. Updates are available for \$15.00 from Ray Bacon. The program also has a classified ads section, an option to log in again without hanging up (neat if there are people waiting to use the board after you are finished), and a What's new section. The program supports up to 4 drives and 1-10 message bases. At the C.A.S.E. show in Nashville, Mr. Bacon demonstrated his pre-release version of Citadel for the C-128 mode. With 36 rooms and XMODEM up and downloading, what most impressed me was that it uses the entire second bank of ram as a high speed ramdisk! The program should be available in a few months.

The next program is as unusual as it is innovative. Written by William Couture, the program is unique in that it stores its messages entirely in memory. Once the program has been loaded into memory, you can remove the disk from the drive and turn it off! It's called the Public Forum Bulletin Board, or PFBB 4.0 for short. The program has one message base, private mail, a users list, a reverse read command, the date and time, and a duplex command. The program also has a pause command to pause between messages for CRT use. You can also change your password, or eliminate your user name entirely by using the unjoin command. The program has a full local mode, and both tape and disk are supported for saving the messages if you choose to take the system down. The program comes with a generous 120K (!) of documentation, explaining the program throughly. The author's comments were that it was "created in the spirit of the FORUM program on the old Minnesota Educational Computer Consortium mainframe, it serves as a low cost entry into the world of a low cost sysop, which is fine on a grad

students' budget". I personally have run the beta test version of this program for over two years with no major problems and would have to say that the software is most solid and very crashproof. 2.04MHz fast mode also works just fine with the PFBB. Available for \$19.95 from DDI, 1580 Rice Creek Road, MPLS, MN 55432 or call (voice) (612)-571-7400. It may interest you to know that this program packs more features in 8K of BASIC code than most of these programs do with fancy ML routines!

The next program on the list is called, 6485 BBS. This program is also available on many local BBS's, or on CompuServe. The program appears also to endorse the freeware concept, with its opening page asking for a \$20.00 registration fee and includes a support line number. This software comes real close to the Comline software above. The address for further information is DIXIE : 830 FM 1960 #15 : Houston, TX 77090. This has a massive menu that allows you to configure the time limit, sysop name, BBS name, hours, disk units, modem types (supports vicmodem, 1650- compatibles, HES, Hayes, 1011A), message base (yes or no), an option to have a user log saved to disk or printer, chat mode (on or off) all from the same menu! It also includes a toggle for accepting uploads from anyone, or just validated users. Some of the other options are to hide the uploads, and allow disk drive access to all, or just the validated users. The sysop has a terminal mode (a really needed feature), access to the sub boards, EMAIL, and more. After running these programs from my own computer, and calling them with my CRT + Hayes, I've seen most of the programs behave very well, though 6485 only allows you two options if you are not validated! You certainly can't do much without validation on 6485.

The amount of public domain BBS programs available for the C-128 is really open to question. One of the more popular programs available is a 64 mode BASIC 2.0 BBS called "64 Machine", which is pretty much a mess, with many heavily modified versions to be found on most BBS's. 64 Machine has a unique auto validation feature - you enter your phone number and it will call you back with write privileges. I find this kind of program almost too easy to undermine, as visions of mischievous adolescents entering the number to the local police department come to mind. The 64 Exchange mini BBS program is another nice public domain program, though it really exists for up and downloading, as it doesn't allow message bases. It's really nice for specifying a private password so friends can pick up files you want them to have if you aren't around. Another program worth investigating is Citadel, written by Cynbe Ru Taren of Seattle. This CP/M mode program is available in the public domain, however, you will have to write your own Z80 modem routines as it is pretty much configurable for any CP/M system. The advantages of this program is that it supports up to 64 different rooms (sub-boards) to converse different topics. When the drift of conversation changes, the sysop can change the room name to reflect the change of topic. This program also supports XMODEM up and downloading. This program should be available for downloading on the MTHB at 612-884-7951 in a few weeks, configured for the C-128. Being a Sysop takes lots of time, patience and money. The software you choose to run your system on will make your time as a Sysop either difficult, or enjoyable. I suggest you shop around and talk to the system operators in your area to see what fits your tastes. Good luck and happy sysop'ing!

# Vizastar 128


by Randy Margolis

Vizastar 128 is a long awaited spreadsheet/database/graphics program for the C-128. Vizastar comes in an impressive package within which is a program disk, ROM cartridge, and the documentation. At a price tag of right around \$100, it is pretty expensive for a Commodore product, especially when similar programs can be had for half its cost. Vizastar performs some extraordinary feats, however, and I think it should be seriously considered for the user who can appreciate its sophistication.

When first loaded you are presented with a blank spreadsheet with about the most putrid color combination imaginable. Fortunately, one of the first things discussed in the manual is how to change these awful colors. Also, each time you save a spreadsheet the color combination in use at the time is saved along with it. This product is designed to closely emulate Lotus 1-2-3 and, considering the memory "limitations" of the C-128, it succeeds quite nicely. Like Lotus, the program is menu driven, with a tap on the CBM key bringing up the menus, from which you can cursor to the desired choice or press the initial letter of the commands.

There are many facilities to aid in spreadsheet input, which is among the most tedious of tasks. For instance, the program can be set to automatically skip to the next cell to the right after typing in an entry and pressing return. In this way, you can just use the numeric keypad and not worry about cursor movement.

The spreadsheet contains 64 columns by 1000 rows which should be sufficient for the largest applications. Numbers can be formatted in several different ways including a true Date function. You can set the current date at the beginning of your session and include it in your work with the @today function. Very nice for dating your spreadsheet.

Vizastar is the only Commodore spreadsheet program I've seen with a true point mode. Anyone familiar with Lotus will be ecstatic over this feature. Suppose you want to write a formula which adds a large column, and then multiplies the result by a constant value stored in the worksheet. With Vizastar you can begin writing your formula, and when you get to the point when you have to start typing in the addresses, you may enter the "point" mode and move around the spreadsheet until you arrive at the cell you want to reference. Vizastar remembers where you were entering the formula and jumps back to it when you are through pointing. Unfortunately, you can't name cells or ranges and refer to them like you can with Lotus.

Formulas are standard, with cell addresses being a combination of a letter and a number, which in my opinion is far preferable to "Row 11, Col 24" syntax. The built-in functions (preceded by the "@" sign) include SUM, AVG, MAX, MIN, a full set of date functions, rounding, and two very useful commands for table lookup. Most of these are identical to 1-2-3. Also, there is an @IF function which provides conditional control over cell entries. One thing I cannot understand, though, is why no financial functions were provided. Things like Net Present Value, Payment and the like. That's the kind of thing people use spreadsheets for, right?

Spreadsheet recalculation can be set to automatic or manual, rowwise or columnwise. Cell protection can be invoked to prevent accidental altering of key information. One other nice feature is that

column widths can be set individually, allowing you to really dress up your work. True relative referencing is implemented with the COPY and MOVE commands. Vizastar automatically adjusts cell addresses when you copy formulas unless you specifically indicate otherwise. The windowing facility is quite impressive, permitting nine (!) windows to be open simultaneously. The program also boasts a lightning fast sort routine by which you can sort lists of information alphabetically or numerically.

The database function is truly impressive and co-exists with the spreadsheet, thus is available at all times. Values can be passed back and forth between these two sections, allowing you to update either one with the other. This is a true disk based database system, with a file structure surprisingly similar to Superbase. Supported are key field searches, importing and exporting of sequential files, and a special Report function. This really is like a subset of Superbase, without some of the fancier commands, but with the ability to interact with the spreadsheet you can turn some nice tricks with it. Unfortunately, the program crashed a couple of times when I was fooling around with the database section. I hope that this was just an isolated occurrence, since these crashes were unrecoverable.

Perhaps the most impressive feature of Vizastar is the "Exec" facility. You can automatically input any one of Vizastar's many command functions, database handling commands, etc. This is an actual programming language with conditionals, user prompts and looping. With a properly written Exec program you can totally automate your spreadsheet or database application! There are some truly awesome examples on the program disk which are fully documented for tutorial purposes, such as user menus, spreadsheet file merges, and so on. In fact, the entire disk tutorial is one huge Exec program!

Be prepared to keep the manual close at hand for a while, as the program author chose not to waste a lot of memory on help screens which, after you get to know the program, become extraneous anyway. Instead, there is a full 60 kilobytes for your spreadsheets. The manual contains a wealth of information on all of Vizastar 128's many features, although I feel it could have been organized a little more effectively.

Printer support is very good, including the ability to send "setup strings", or escape codes, to your printer at the beginning of a print run. Also, on Commodore or Epson compatible dot matrix printers you can print out high resolution graphs from Vizastar's impressive graph section. Included are bar graphs, full color exploded pie charts, and, perhaps most outstanding of all, full color three dimensional multibar charts.

Is all this worth 100 bucks? Is the full database capability and macro language worth twice the price of similar C-128 application software? Consider also that with the need for a ROM cartridge you are precluded from using memory expansion units. This, I think is the program's most serious flaw. It is likely that the high powered business user is just the one that will be using the memory expanders. If your computing needs require the kind of power that Vizastar provides, by all means ask for a demonstration and compare it with other spreadsheet programs. You may find that Vizastar is just the product that you were hoping for.



We have recently learned that the C-128 is gaining a great deal of popularity with interstellar travellers. It seems races from beyond our planet actually prefer the C-128 more to computers of their worlds because of its flexibility and ease of use. Apparently, extraterrestrials have been stealing large quantities of C-128's from Commodore plants worldwide, and are in fact the root of Commodore's financial bind, and the shortage of C-128s on dealers shelves in some regions. When questioned about this recently, one Commodore executive stated emphatically, "NO COMMENT!" However, in our search for the truth, we intercepted the following communique:

IN SEARCH OF THE PERFECT TELECOMMUNICATIONS SOFTWARE - Stardate 9875.3: The search ends. First Officer Margio Trellfar reporting...While mapping the vast C-128 software racks on Earth we made an important discovery, one which will have far reaching effects on those who use their C-128s as telecommunications devices. Sensors indicated that the product's name was BobsTerm Pro, a disk based terminal emulation package for the C-128 by Bob Letini from Progressive Peripherals. Being an avid telecommunicator of SYSOP rank I acquired this piece of software for further investigation.

Upon my return to starbase delta seti I immediately retired to my quarters for a session with my venerable C-128 and this alien program. I carefully opened the box and found a floppy disk, a good sized instruction manual and a small grey plastic "dongle key". I was especially pleased to see the dongle key. Dongle keys are the latest and perhaps most sensible form of software copy protection, because it protects the rights of the software producer against illegal distribution of his/her product while allowing the user to freely and easily make backup copies of their software. The dongle for BobsTerm Pro plugs into the C-128's second joystick/mouse port and must be inserted before the program is executed.

Upon examining the manual I found BobsTerm Pro to be an extremely sophisticated telecommunications program that was extremely well documented. The manual has twenty-six sections which cover step by step, every aspect of telecommunications with Bob's Term. I found the sections to be extremely thorough and so comprehensive that the manual for BobsTerm Pro could conceivably be used as a very good telecommunications primer. The only shortcoming of the manual I could find was that while it had an extensive table of contents, the manual lacked an index.

On the box in which BobsTerm Pro is packaged it says, "The last communications program you will ever need", and that claim may in fact be valid. BobsTerm Pro is without a doubt the most complete telecommunications package I have ever seen on ANY MICROCOMPUTER, not just the C-128.

Just for starters, BobsTerm Pro has a 60,000 character capture buffer. In my opinion, this is perhaps the most important feature of any terminal emulation software. This means you can collect an immense amount of information (equivalent to over 235 disk blocks!) for later viewing, printing or editing. BobsTerm Pro's capture buffer includes a built in editor which encompasses the best features of a good word processor such as block editing, search and replace, and output formatting. Buffer contents can be saved to disk,

sent to a printer, or to another computer via the modem. For some individuals these capabilities alone would be enough to justify the cost of this program but BobsTerm Pro features so much more.

Of course another important consideration for any terminal emulation software is the modem compatibility. BobsTerm Pro has no problem here. BobsTerm Pro provides a variety of preset parameters for almost any modem that has come to market, plus BobsTerm Pro affords the user the ability to define their own parameters, thereby further insuring compatibility in the future. BobsTerm Pro also supports ten transmission speeds from 50 to 2400 baud. Another nice feature is BobsTerm Pro's ability to emulate some of the most popular dumb terminals such as Digital Research's VT100 & VT52, and of course the 80ADM31.

BobsTerm Pro also affords the user a great deal of flexibility as far as file transfers. In addition to the traditional Xmodem and Punter10 protocols, BobsTerm Pro also supports XON/XOFF, straight ASCII, straight binary, sequential line with prompt wait, and DCL/DC2 capture. With this kind of flexibility I would be surprised if there exists a bulletin board or a network anywhere in this galaxy that this piece of software will not be able to transfer files with. I also like BobsTerm Pro's view transfer option which allows you to see the incoming or out going data as it is being transferred.

BobsTerm Pro can also be fully automated with an extensive, but fairly easy to use macro programming language. There are provisions for autostart and autodial macros as well as the ability to automate any function or option on the menus. This means that the user can program complicated log-on sequences for getting onto local or national systems with a single keystroke. In fact, anything that can be done from the keyboard can be programmed into a macro for automated execution. Macros can even be linked together to form very intricate sequences that are capable of conditional evaluation. BobsTerm Pro can also be programmed for timed execution of commands, or can be used as a remote BBS so that your C-128 could telecommunicate without you.

I could go on and on about the features of this package, but I realize that the Galactic High command is pressed for time so I will just add that BobsTerm Pro also incorporates: a word wrap toggle, two system clocks, a screen echo toggle, a programmable phone book and autodialer, and seven fonts styles plus the ability to add up to three more user font styles.

I am obliged to report that this program, while operating smoothly and completely "bug-free" does have two drawbacks, first, the price. 1400 - 2000 galactic credits (\$60.00 - 70.00) is a hefty sum for this program, but it is worth every penny for the SERIOUS telecommunicator. However, the casual user might be better to continue the search in the public domain. My only other gripe is with the character sets that are provided, I feel they could be a little larger and clearer, but this is only my opinion and this is easily corrected by adding the standard set to the options (See Sparrow's Slick Tips this issue) although this option could have been provided by the author. Overall this is a superior product, to which I give my highest recommendation.



At last, another serious development language for the Commodore 128! Super C-128 from Abacus Software presents a great opportunity for programmers who prefer portable, structured languages to develop products for the C-128 market.

A basic feature of Super C-128 is the presence of a command line processor to control the development and execution of programs. This provides an environment closer to CP/M or MS/DOS than to the usual Commodore DOS. All operations are initiated from this command line. At the same time, Bank 1 of the C-128 is configured as a RAM disk, capable of holding function libraries, programs, and data.

The use of Bank 1 as a RAM disk has many advantages. First, the entire editing, compilation and linking process can occur with the system disk in Drive 0, using the RAM disk to hold temporary files. This makes the whole process quite rapid. Loading and saving programs to the RAM disk is virtually instantaneous. It is so fast, that at first one doubts that anything has happened. Multiple repetitions of the development cycle can be executed without having to swap disks, load files, etc. Of course, since RAM disk data disappears when the computer is turned off, it is important to save source and object files to a data diskette at the end of a session, or whenever you feel that some significant change should be permanently recorded.

Second, the use of Bank 1 as a RAM disk restricts programs to Bank 0: in practice, this limits programs to about 51k of compiled code. Since this code includes space allocated for data storage, it might seem that programs of only limited size may be produced with this system. But the RAM disk is always there. Programs can use it just as well as the development system. Thus data may be stored in RAM disk files - able to be accessed quite rapidly, and which remain even if program chaining is performed. Thus fairly powerful programs may be developed with this system.

Super C-128 comes with function libraries for math and graphics as well as an expanded standard library. It also has a macro definition file for the usual character testing and transforming operations. Unfortunately, there is no library of sound functions. And the graphics library is limited to supporting multicolor bit-mapped graphics. But it shouldn't be too hard to put together functions for hi-res graphics and sound. It would have been helpful if Abacus had supplied the source for some of their function libraries, even if this would have meant adding another diskette to the package.

The manual that comes with Super C-128 has been much improved over the earlier SUPER C 64. Abacus has even tightened up their spelling on this one. (Not entirely though!) The manual gives a fairly good hands-on introduction to using the system as well as an introduction to C itself. Thus the package is useful to programmers who are just getting into C as well as more experienced users. I was able to get the package running in minutes, editing, compiling and running a simple program within an hour of opening it.

I mentioned that program chaining is possible between programs produced by this compiler. It would be nice if overlays were implemented as well. This would allow large modular programs to

share data more easily and rapidly. Of course, chaining to programs already loaded into the RAM disk should be fairly quick by current standards.

Super C produces some very fast code. In a simple benchmark that I wrote to compare execution of a simple loop, BASIC 7.0 in slow mode came out at 54 seconds, in FAST mode at 27 seconds, in a BLITZ'd version in 17 seconds. Super C-128 ran the same algorithm in 11 seconds, and with the computer in FAST mode in 5.7 seconds.

As usual with Abacus products, Super C comes on a heavily copy-protected diskette. To have a backup, the company wants an extra \$10 along with the registration card. It seems to me that anyone using a compiler will be using their diskette fairly frequently, with a greater chance of having the disk sustain some damage. Since it is annoying for to go without your tools waiting for a backup, this product would have been more useful to software authors if it had been protected by a 'dongle' or hardware device. Of course, Abacus might eventually follow the industry leaders by not copy protecting their programs. After all, not many hobbyists can really use a heavy-duty compiler such as this one, and anyone involved in commercial program production is likely to want the end-user support that having a legitimate copy makes possible.

More importantly, the copy protection scheme might damage a drive. The second time I attempted to load this compiler, my 1571 (only 5 months old) began to sound as if the read/write head was seeking a track located south of Rio. I quickly shut down the system. Prior to this I had experienced no problems with this drive. But from that time forward, the drive was seriously out of alignment, and I was forced to replace it. In Abacus's favor, I must report that the compiler is loading without incident on the replacement 1571. But the original drive should never have been damaged.

An additional problem arose after I had developed a 600 line source file within the Super C editor. As I made corrections to various places within the file, it was natural for me to scroll back and forth between the functions I was correcting. I began to discover stray digits scattered through my source text! At first I suspected that the video chip in my computer was bad - but I discovered that these random digits had actually become part of the source file, generating compiler errors when I moved into compilation mode. After some experimentation I found that these random digits were only produced when I scrolled rapidly through the file - movement using the GOTO LINE # command in the editor didn't produce this problem. However this really reduces the function of the built-in editor to a line editor, not the full-screen editor I had hoped to use. Super C stores text files as "usr" type files - a format not readily produced by other, more reliable, full screen editors. Although it is possible to import files produced by other editors, the tedium of doing so is hardly worth the bother. It negates all the ease of use achieved through use of the RAM disk.

This compiler is thoughtfully designed and would be of benefit to anyone who is looking for an alternative high-level language in which to program. But until Abacus fixes their editor, and ceases to threaten the functionality of our disk drives with their protection schemes, I cannot recommend that you purchase it.

# *1001 Things to do on your C-128*

*by Avonelle Lovhaug*

As I was perusing my local bookstore looking for new C-128 literature, I happened to come across a new book by Tab Books Inc. called "1001 Things To Do With Your Commodore 128." Typically, when I run across something with a title like this, I toss it aside as worthless sap. To me, a book that is going to tell me how to use my machine is a waste of my time, because I already know what I want to do with my C-128, and if I didn't know, I shouldn't have one. However, since the book was newly released, and since it was C-128 specific, I thought I'd pick it up and warn others about it.

Much to my surprise, this book really charmed me. "1001 Things To Do With Your Commodore 128", by Mark Sawusch and Dave Prochnow, is a worthwhile book for anyone who owns a C-128 or who is considering buying one. It is NOT a list of software titles for the C-128, nor is it 200 pages of word processing and databasing hype; instead, it is a book filled with some creative and interesting ideas of ways to use your C-128.

The book is divided up according to broad applications divisions. For example, the first section is titled "Applications For Everyone." In this section, many of the usual suggestions for home computing appear, such as balancing the checkbook, indexing recipes, storing greeting card lists. However, what makes this book wonderful is that it also gives some ideas that most people never would think of. For instance, had you ever considered using your computer as a shorthand translator by developing a method of shorthand that the computer could decode while you wait? How about using your C-128 to figure out how much wallpaper you'll need for your entire kitchen? Do you keep track of your car maintenance information on the computer? Information such as when and where your last tune up was, etc. could prove useful and easy to locate if it is stored on a disk somewhere. These were all suggestions in this book. Not type-in programs, although there are a few short ones scattered in the book. Instead of programs, a short description of what the program would do, and sometimes an outline or a formula are provided. This book is especially useful for the programmer who has trouble of thinking of new programs to write.

The second section is devoted to business and financial applications. Investment theory is a significant part of this; the book becomes a sort of mini-primer for investment and stock theory. Several different stock analyses are provided, such as fundamental analysis, moving averages, price/volume trace, change distribution, price indexes, and trend line analysis. The list goes on for several pages. Mortgage theory is also covered, as well as some formulas for depreciation. A few pages are included to get the readers started in more organized personal finances, and using spreadsheets to calculate figures. My favorite part of this chapter was the section called "Money-making Applications." Besides making stock predictions, the authors suggest using the C-128 to start of number of service-oriented businesses. Some of the more standard ideas were a word processing business, a typesetting and indexing business, and a mailing list business. However, the authors also included some that had never occurred to me, like starting a collection business, a newspaper clipping service, a computer dating service, a supermarket comparison service, or selling personalized children's books (writing and printing done on the C-128). This certainly isn't an all inclusive list, but it did offer some fresh notions for

those of us who had been considering this idea for a few years now. Next, the authors suggest that business decision making can be facilitated on the C-128, helping to compute reorder timing of inventory, demand forecasting, market research, analysis of vendors for purchasing, and bid preparation and job pricing.

The next two chapters involve mathematical, statistical, and scientific applications the C-128 can be used for. Formulas for some basic statistics are included, as well as some examples of where those statistics might be important. As a former math student, I was impressed by the kinds of mathematical problems I could solve using my C-128; if only I had known then what I know now! Two important sample programs are offered, a trigonometric calculator and a trigonometric plotter program. Both programs are fairly short, and although they aren't spectacular, they do meet their respective objectives. Also, I think the person who types them in will learn a few things about BASIC. Probabilities are also covered, as well as some mathematical games that can be played via the C-128. Scientific applications, according to this book, include weather forecasting, energy efficiency computations, and medical, chemistry, and physics calculations. This kind of number crunching is something I always knew could be done on my C-128, but the authors present such interesting questions and problems to be solved, that I was intrigued and wanted to try out some of their suggestions.

The next few sections deal with educational and entertaining uses for the C-128. Besides the obvious educational use of drill and practice that the computer provides to students, some other ideas are given. Simulations are a large part of this, and such simulations as world dynamics, astronomical theories, and the growth of an amoeba colony are a few examples of the kinds of things the book suggests. Some other educational program ideas given include math flashcards, logic reasoning, metric calculations, spelling drills, and speed reading tests. It was unfortunate that the educational section was so short; it is my belief that the educational uses of the C-128 are underplayed and need to be exploited more fully. However, there were several original ideas given, so it wasn't a total waste. Probably my favorite section of this book was the hobby applications chapter; I really enjoyed some of their ideas. For the visual arts, the authors suggest random art patterns generated by the C-128, or kaleidoscope patterns. For the musical arts, programs that compose music are an interesting concept, as well as using the C-128 to educate students and quiz them on musical notation and important works. Sports statistics, garden planning, amateur radio assistance and model building are all ways the C-128 can be used to assist people with their hobbies. And of course, an entire chapter is devoted to the games that people can play and write on their C-128 for entertainment and education.

Some of the last chapters of "1001 Things" deal with the C-128 applications that are more complicated, and are also many times more expensive. A big section of this is the notion that the C-128 can be rigged to control household appliances, lights, alarms, and security apparatus. With the right connections, and the right equipment, a robot can even be hooked up to be controlled via your C-128. (According to the authors, HEROjr, by Heath/Zenith Corp., is one such robot that is already available to be

### 1001 THINGS CONTINUED

connected to the C-128.) The book also spends some time describing national (such as CompuServe) and local BBS systems, and the advantages of gaining entry to such services. (The book tends to focus on CompuServe, barely mentions Quantum Link, and doesn't mention GENie.)

The very last chapter of the book gives us few more way out ideas of things to do with our machines. Language translators, dictionary compilers, literature analysts, and grammar checkers are just a few. Aid to the handicapped is becoming a more frequent use of the C-128; exploiting such areas as voice synthesizers, conversion of text into braille, telephone dialers, and quick information management are some brief suggestions in a new field of applications opening up to the C-128 world. The last few pages of the chapter list 50 miscellaneous applications which didn't always fit into the other categories.

My only complaint about this book, and it is a minor one, is that occasionally I would have appreciated a little more guidance from the authors on where to look for software that would perform these kinds of functions, or at least where I could buy a book to teach myself to write the software. Related to this problem, sometimes the book seemed to general for me, and I wished for specific C-128 examples. These, however, were infrequent occurrences, and most of the time I was just plain awed at the ability of these writers to come up with so many unique thoughts, and ones that were useful too!

I was really impressed by this book. It was very evident that a lot of creative thought had gone into the development of it, and by the time I was past the first chapter, I was excited to get started on some of these new ideas. For the person who isn't interested in taking their machine farther, this book is worthless. But if you are the type of person who wants to get the most out of your C-128, I suggest that you give this book a chance.

How many times have you run across something done by Printshop and groaned, because all the posters and banners look so similar? Well, in most instances of "software sequels", one usually finds a costly but mediocre program designed to increase the original program's flexibility and efficiency. Printshop Companion, by Roland Gustafson, seems to be at first glance merely another software sequel to be used in conjunction with the original (and popular) Printshop by Broderbund software. As it turns out, it is neither costly nor mediocre, but what does it do for the original Printshop?

First off, the Companion has a graphics editor, which lets you change the original's pictures or create your own to use. Also, just to make sure you don't get bored with those old Printshop graphics, Broderbund also includes a whole bunch of extra pictures to work with on the Companion disk. Presto! Instant flexibility.

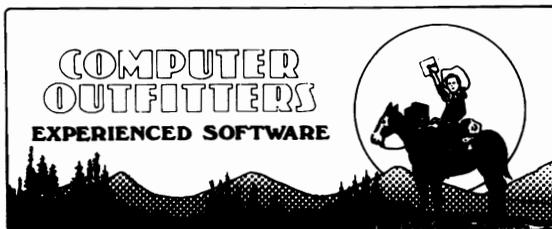
Remember the borders? Printshop Companion not only offers many borders for you to choose from, but a complete border editor. You can change the shapes that make up the border, and even the directions they face. Moreover, you may use a different shape for each side.

Perhaps one of the most irritating drawbacks of the original Printshop was its lack of good letter fonts to use. The Companion disk remedies this with a wide variety of fonts to use, and (you guessed it) a font editor.

The Printshop Companion also offers a "Creature Editor" where you can invent your own oddly-shaped humanoid (using pre-drawn body sections), and use it later as a Printshop graphic. A calendar maker is useful for keeping track of weekly, monthly, or yearly appointments via a schedule it prints out. This is perhaps one of the more useful functions of this program. [Editor's note: Many of the new enhancements including the calendar maker seem to be in direct response to the competition presented by Printmaster, another menu-driven quickie graphics application program, which was modeled after Broderbund's original Printshop but offered many substantial enhancements such as a calendar maker. Broderbund sued the distributors of Printmaster for copyright infringement because of the similarities between Printshop and Printmaster. One wonders now whether the folks who developed Printmaster have the basis for a case against Broderbund for the same thing.]

Finally, true to its forerunner, the Companion wouldn't be complete without a useless graphics display, which it calls a "Tile Maker". Endlessly changing designs are displayed on the screen for you to watch or ignore.

As you can see, The Printshop Companion could just as easily be named "Printshop Editor", but just the extra graphics and fonts it supplies make it worth the \$34.95 average price. The editors are well done too (but they would be difficult for younger kids to use), and the program as a whole contributes very favorably towards making an already popular program much more fun and useful.



2730 Snelling Avenue North

Roseville, Minnesota. 55113

(612)631-1763



I have been asked by the editor to discuss some of the less well-known products in the CP/M library which newcomers to CP/M should know about. I'll gladly share my CP/M enthusiasms with you.

The first CP/M gem I'd like to discuss is Leor Zolman's BDS C compiler. C has become the most popular compiler language for microcomputers since its introduction, and BDS C was one of the implementations that allowed that to happen. It features everything a programmer could want in a compiler - fast development times, fast execution times of compiled code, tight object files, and it is specifically adapted to the CP/M environment. A huge public domain library of utilities and other programs has grown up around it.

BDS C compiles C code faster than any other CP/M compiler. To quote its author, "There is nothing quite so annoying as waiting for a slow language processor to crunch through its task, only to be told (after many minutes) of some trivial errors which then require the entire process to be repeated. With BDS C, such errors usually show up within seconds after starting the compiler ... and programmers can spend their time programming instead of muttering obscenities at slow computers." In my own experience with this compiler, which includes writing some large systems, a single module has never taken more than a minute to compile. Usually, it takes 25 seconds for a 300 line module to be compiled. If there are errors it stops as soon as they are identified, making the process even faster. This is achieved by in-memory compilation -- the entire source file for a module is processed at once. The resulting turn-around time is suitable to one who has been used to the speed of interpretive systems.

The resulting modules must be linked of course, but the linker is even faster than the compiler. And if you've forgotten to specify all the modules it needs, it stops and asks you to indicate in which module the missing function is to be located. When it has completed its tasks, the resulting object file is written to disk -- a native code program. Typically it is only 40% of the size produced by other CP/M compilers.

One further advantage of the linker is that it allows programs to have overlays - a technique that frees the developer of the constraints of memory size of the machine. In addition, the linker has switches that allow the program to be optimized for size or execution time.

BDS C is tailored to the CP/M system, unlike most C compilers that try to maintain compatibility with UNIX (the operating system associated with C originally.) It includes functions that allow the programmer to get at the major entry points of the CP/M system. It is a pretty good substitute for assembly language in most cases, while being vastly easier to use.

This compiler has been no secret in the CP/M world -- many companies used it as a production tool while CP/M was the dominant operating system for micros. In addition, there exists a BDS C users group which has a large public domain library, full of utilities, games, word processors, modem programs, and such. Because C programs are built up of independent functions, this library is a regular treasure house of programming tools, many of which can be lifted straight into another program with no alteration.

This compiler is very reliable, having been widely used and constantly supported for the past 7 years. Very few micro products can boast the same history.

BDS C is not public domain, but as it is priced at just over \$100, it remains accessible to a wide audience. It comes with a full set of compiler utilities, source code for its function libraries, and example programs. A nice feature included with this compiler is the symbolic debugger package, allowing the developer to trace the execution of a compiled program. It even includes a combo editor/modem package in case you don't have these utilities for your CP/M system yet.

The manual, packaged in a beautiful loose-leaf binder, does not attempt to teach C, but concentrates on showing how to use the compiler effectively. There is an extensive section covering both console and file I/O techniques. Both a table of contents and an index helps the user find information quickly. The author has a style which is somewhat less dry than the usual tech-writer verbal anesthetic -- one gets a sense of this product as being a cult classic. Which indeed it is.

In summary, I strongly recommend this product for CP/M program development. It is definitely one of the "CP/M gems".



We took a look at Quantum Link several months ago, when it was still a novelty for many Commodore users. Since then, Commodore has begun offering special rates, free software, and more features in an attempt to lure all of the new and most of the older members of the C-64 community. One can hardly open a Commodore-oriented magazine anymore without seeing an ad or review of some new feature that Quantum Link is offering. In order to keep up and to keep our readers informed, we join the flock.

I have subscribed to the service for the past 7 months, and only in the past 3 months have I gotten real use out of it. I search for software for our Public Domain disks, music files, look up facts in the Electronic Enclyopaedia, chat with people around the country, play trivia, and receive files from our writers. The service, while much cheaper than most of the other national networks, tends to be a bit harsh on the budget, once the addiction is formed.

For those of you who have never used Quantum Link, a bit of an overview might come in handy. It is an on-line data base and information service that is not owned by Commodore, but seems to have become the cornerstone of CBM's Customer Service Department. As well as providing data transfer areas, public real-time talk areas, and data bases dealing with quite a few topics, Commodore seems to handle most of its' Consumer relations through this service. If you have a problem, you can leave mail for CBM, and quite often join other Q-Link users in forums with the engineers that designed and built the C-64(c) and the C-128, and occasionally the Amiga. Here questions are answered in a willy-nilly fashion, and sometimes it is pretty difficult to get your question recognized, but one can always just sit back and watch them, or download a record of the proceedings at a later time.

The People Connection, which is a real-time conversation area, is similar to the CB areas that exist on CompuServe and GENie, and make it possible to set up additional public and private "rooms" that make subject-specific conversations easier. There are various clubs and organizations that hold regular meetings in these areas: clubs dealing with such topics as Astronomy, Chess, Bridge, Trivia, Foreign Languages, Music, and Computer Graphics. There is no additional fee for entering these areas, besides the "Plus Service fee", which is \$3.60 an hour. There is also a monthly user fee of \$9.95 which helps Q-Link defray the cost of the phone lines they keep open (most major cities have Telenet and Tymnet numbers) that are in local phone areas around the country, so few users need call long-distance. (I want to include a note for our Canadian readers - this system is not cheap in any way for you. Quantum Link has set up Datapac access numbers for most of the major cities in Canada, but these are extremely expensive - \$.15 per minute! This is in addition to any long-distance charges if you live outside one of these local areas, and also in addition to the plus-time charges. If you live close to the U.S. border, I would suggest exploring long-distance calling to an American city number. It might work out cheaper.)

Recently, Quantum Link began shipping out new versions of the software that one must use to access the system. The old versions had problems with many modems, and also had the nasty tendency to cut people off during data transmissions, resulting in wasted time costs, and bad feelings among users. The new versions (Version 3 being shipped directly from Q-Link, Version 4 being packaged with GEOS) have files to handle a larger variety of modems, and better error handling, as well as improved 1200 bps transfer speeds. The system relies heavily on low-resolution graphics that most users of C-64's are familiar with, and these have been altered and "improved" in the new versions of the software. The new versions also will boot up in C-128 for us, but will dump us back into C-64 mode while loading.

Downloads are handled in a better manner than before: the user is now told before the transfer approximately the duration of the transfer, as well as updates during the transfer regarding the remaining portion of the file. A welcome addition is a bell signal at the end of the transfer, which frees users from sitting at the keyboard during the transfer.

Message bases and Electronic mail is the foundation of almost every national network, and

Q-Link has improved both of these in this update. Movement within the message bases is easier, with the necessity of moving to "master menus" to access new messages, and a sort of message tree (responses to a message filed with the original message, rather than in a separate area), and simpler response protocols all help to speed up visits to these vital resource areas. Electronic mail used to be a real chore, since when one received a piece of mail, it was necessary to delete it, enter the menu and select "Send mail", then enter the name of the person who just sent the mail. The improved system allows for saving the message to disk, directly responding to a piece of mail, or deleting it.

The service is as necessary a part of your computer budget as magazine subscriptions. In fact, since almost every piece of information that is published in any magazine that is worth anything at all eventually finds its way to the message bases of Quantum Link, it might even be a better investment of time and money. Whether you will use all of the features that Q-Link offers is up to the individual user. It certainly seems to be the most widely used network for Commodore owners.

I don't want to seem an unequivocal cheerleader of this system. It has many drawbacks, such as slowness in the early evenings when most teen-agers are still up (usually from about 8:00 to 11:00 p.m. CST). The system seems very erratic during this period, and is prone to short "shutdowns for system maintenance," which are annoying during the middle of a file transfer. They try to compensate for this by announcing prior to the planned ones how long the system will be down. Also annoying are the self-same teenagers that seem to enjoy upsetting serious users in the public talk areas by literally attacking people verbally and cluttering the conversations with screen garbage (PETASCII graphics symbols, profanity, and nonsense). There are system watchdogs that purge these people, but often it is too little, too late.

One might also question Commodore's practice of providing every new modem and computer owner with software for this already over-loaded system. I have heard from sources on-line that Quantum Link is attempting to improve this situation, but the solution is still a long way away and will probably be insufficient in the long-run. And as these users become hooked, it will increase the demands on the system. It is a good business practice for both Commodore and Quantum Link, since it has the same function as a drug dealer giving out free samples of heroin. No matter how poor the service is or becomes, there will always be the addicts out there who will log on to get their daily fix of information, all to the benefit of the ledgers.

I will admit that I am currently an addict, but intend to try curb my habit a bit with more work on other "free" information sources. I haven't found a good source of this type of "methadone" yet, but hope to soon.

If you have strong will power, sign on to Quantum Link for a look at the wilder side of computing. If not, try something safer, like upgrading your RAM expansion to 512K. It will be cheaper in the long run.

**Question:** Why does the 1571 hunt when trying to access a disk formatted in the 1541 mode and how can it be prevented?

**Dave:** From what I've been told by the disk designers, this happens when you have a 1541 disk that's either formatted on both sides (a floppy disk), or was at one time formatted for a 1571. In either case, the 1571 reads the sync information on the second side and looks out there for a directory and other stuff on the second side. The 1571 routines naturally re-check any reads that don't return what's expected, so what you get is a lot of "gronking" and a 15 or so second wait. The best way to avoid this seems to be to avoid floppys as much as possible, and if you reformat a 1571 disk to a 1541 format, really erase the second side (magnets do this well).

**Question:** Are the chips in the ram expansion boxes available as off the shelf items?

**Dave:** The memory chips are: standard 4164 parts are in the 1700, and 41256 in the 1750; both DRAMs. The only other chip in the system is a custom part, the DMA controller. We invented it, and you can't get it anywhere else. I don't know if the schematics are released or not. You could upgrade a 1700 to a 1750 by pulling the '64s and replacing them with '256s, but of course it would void the warranty and it's not that easy de-soldering 16 memory chips. You'd also have to change the state of a jumper on the board, it tells the DMA chip how much memory is installed.

**Question:** What is the ASCII code for the help key and also what is the ASCII code for the alt key and any of its possible uses?

**Dave:** The help key does not generate an ASCII code, it works like a function key (C-128 mode, not C-64 mode). Somewhere in memory there's a string associated with the help key; I don't know offhand where it is. The ALT key is a bit different; its intended use is mainly for foreign keyboards which have special characters like accents and omlats. It can also be used as a shift style key, through machine language, as in the VT100 program.

**Question:** Does Commodore plan to correct the ROM chip error?

**Dave:** Well, maybe. I assume you mean the several bugs in the first release of the C-128 BASIC/KERNAL ROMs. Engineering has already signed off a ROM with some bug fixes, though as far as I know it hasn't yet been released. I have no idea as to CBM's intended policy on ROM upgrades, though I would certainly recommend to them that they allow an upgrade for those who want it, maybe through service centers.

**Question:** Is there ANY way to activate the 1571's faster transfer rate while in C-64 mode??

**Dave:** No. For compatibility reasons, the Fast Serial protocol in C-64 mode is electrically removed. Nothing short of modifying the C-128 circuit board would permit full Fast Serial in C-64 mode.

**Question:** How may one use the empty rom socket in the C-128? How big of an Eprom can you use, etc.?

**Dave:** The internal ROM socket is very much like a cartridge ROM, and can be banked in with the MMU by setting it for Internal Function ROM. The ROM

can be up to 32K of code, the upper and lower 16K sections can be banked independently. The upper will replace the Kernal, the lower will replace the HI half of BASIC.

**Question:** Will the memory expansion be a ram disk Or Ram?

**Dave:** The memory expansion is a bit of both. It's not directly addressable RAM, so in that respect it looks like a dumb RAM disk. But it allows transfers between internal and external memory at up to 1 Megabyte/second, which is faster than your average RAM disk. The expansion is set up in CP/M as a RAM disk (drive M:); in C-128 mode you use the BASIC FETCH, STASH and SWAP commands. Finally, there's a good chance that at least one third party developer will release a RAM disk driver for C-128 mode before too long, something that emulates a 1571.

**Question:** Are there plans for an assembler along the lines of the 64 MADS system?

**Dave:** Actually there is. And it's DONE. Fred Bowen, of C-128 Kernal and Editor fame, has written a C-128 assembler and loader package, and another programmer, Hedley Davis, has written a full screen editor modeled after DEC's EDT editor (Fred and Hedley do all of their 6502 code on a DEC VAX), and last I heard they've released it to the software group. As far as I know they plan to market it; its such a good system I can't imagine CBM not selling it.

**Question:** Can the C-128 operate faster than 1200 baud?

**Dave:** It can. The C-128 will run 1200 baud very well in 2MHz mode, and could do about 2400 baud with very tight programming in machine language. You might be able to go a bit faster, but you won't be able to do much else, like terminal emulation, at the same time. CP/M mode is pretty much limited to 1200 baud.

**Question:** Is the kernal in the C-128 compatible with the vic and C-64 kernals?

**Dave:** The C-128 Kernal has the same functions and the same routine locations as the C-64, VIC-20, PET, and CBM Machines. The main difference with this as opposed to other Commodore machines (except the PLUS/4) is that the Kernal routines only exist when the ROM is banked in. There are also new kernal calls that support some of the newer C-128 functions, and I believe there are even formal jump tables for the Editor and BASIC.

**Question:** Is there to be a C-128V of Q-Link soon.

**Dave:** I don't work for Q-Link, so I don't really know. But maybe if all of you C-128 owners would write them and ask for one, they'll do it. Personally, I'm sick of doing these conferences in C-64 mode.

**Question:** Help! I need to use my C-128 online to a mainframe at 2400 baud, but as you probably know, it seems to require more than a simple setting of the command register. Any advice?

**Dave:** 2400 baud will not be something you can do from BASIC. The best thing to do would be to find a commercial terminal program capable of that speed. It would probably involve coding a tight machine loop, or at the very least using the Kernal and tweaking the user-definable baud rate.

Jeff: I hear that Steve Punter has modified one of his terminal programs for 2400 baud....haven't tried it myself though.

Question: Is it really possible to use the 1702 monitor as these discount houses claim with their "special" cables?

Jeff: Yes and no.... Yes it is possible by using a simple cable connecting pin 7 of the RGBI connector on the C-128 to the composite video in of the 1702 to show you what's being displayed in 80 columns. The problem is that the resolution of the 1702 is not quite enough to keep you from going blind. The phospor dots on the 1702 are too big (.6), and to really display 80 columns correctly you need something like (.43) like the 1902. If you are on a budget, I would consider buying a monochrome monitor for the 80 columns which is available in many computer stores for about \$99. You will still need this cable, but most monochrome monitors have sufficient band width to handle this.

Question: I would like to access graphics functions from ML but can't find them ROM. Can you give me a hint?

Dave: Well, the ROM to look in is the BASIC ROM(s), which start at \$4000. You'll have to look in BANK 15 (Fxxxx from the monitor). The BASIC jump table starts at \$AF00. Most of the graphic functions are accessible starting at \$AF6F. You can find out more (than I know) in the RKM, or poke around these locations in the monitor. And remember that the addresses I mentioned are jump table vectors.

Question: Why did they make Amiga software before C-128 software? The C-128 came first and I might add is making them more money.

Dave: I'm not quite sure who "they" is, but if you mean CBM, they didn't. CBM currently writes only systems software, at least for the most part. Commodore-Amiga does distribute some 3rd party software under the C-A name. This is really necessary to help the Amiga get off the ground. The C-128 had maybe 5,000-10,000 programs that would run on it even before it was introduced, and it's much easier for a developer to write a program for the C-128 -- it is similar to something he's programmed on before, whereas the Amiga is VERY different.

Question: Why would a program that operates in BANK 0 (with "\$OE" in \$FF00) not operate in BANK 1 (with "\$4E" in \$FF00)? The program is ML.

Dave: If it's not trying to co-exist with BASIC, there aren't many reasons. If you use the Kernal, you should be careful to call routines so that the routine returns to the same bank it was called from. Also, the common memory physically exists in BANK 0 RAM; it's possible that that's causing some problems. But the machine code itself has no concept of BANK, that's known to the operating system, not the microprocessor itself.

Question: Is the C-128 going through any redesign?

Jeff: Actually we have been batting around some "spin off" products lately. What would you guys like to see....More features for more money, or less features for less money?

Question: I have found that my C-128's upper

memory zero page cannot be edited unless it is moved, as the same for THE KERNAL. I had recently reprogrammed the E000-FFFF on my C-64 and edited the screen and boot up screen colors. In order to do that I had to move E000-FFFF to another place and then edit it. It worked! But as for my question why can't the zero page in memory be edited.

Dave: It sounds to me like you're running into common memory. The C-128 Kernal sets up the bottom of memory as common between the two banks. What this really means is that the bottom 4K or so will be in BANK 0, no matter what the MMU register at \$FF00 says. Setting the RAM Configuration Register's lower four bits to 0 (at \$D506) will turn off common memory, however, this probably can't be done from the monitor; the system interrupt routine refreshes the MMU values every jiffy. You could try it in the monitor, and certainly do it in machine code.

Question: Is there any updated chip in the C-128 computer in C-64 mode, that the C-64 does not have?

Jeff: Well, you have the obvious 80 column chip and Z80, but most of the core of the C-64 is intact. Some registers have been added to the VIC chip and of course now we have an MMU. (MMU is not accessible in C-64 mode)

Question: Are there other "chips" that plug into the C-128's "empty sockets" and what would they do?

Dave: That's a 32K ROM socket. Any program in 32K or less could probably go in, with the proper hooks into the Kernal so it's recognized. It looks very much like a cartridge ROM.

Question: Is there anyway to send AUDIO output from the 1902A monitor?

Dave: Well, the 1902A monitor doesn't output sound, so you can't. But you of course want a way to hook up sound to the 1902A and something else. The A uses that funny DIN cable instead of the normal RCA phono jacks. As far as I know, the only thing you could do is get a special DIN to DIN cable for either end of the connection, which taps out the sound. Unless the A has an earphone jack.

Question: Does the 1571 use burst mode whenever possible or just in ML?

Jeff: Burst mode is used for the loads. Saves and all other disk accesses are done using fast serial. It is possible to use burst commands for other operations via machine language coding.

Question: Is there any way to access the ESC, HELP, ALT, keys for C-64 mode?

Dave: Not easy, but possible. All of these keys are scanned by the first three bits in the VIC register at \$D02F. These act as additional output lines, the normal CIA is used to read them. I believe there's a PD program on line here that will scan these keys, and the numeric keypad, in C-64 mode.

Question: How come tone dial does not work if the audio out from the computer is not connected? Also 1902A users cannot connect the audio w/ the cables supplied w/1660. I had to cut the 40 column cable to access the audio out signal.

Jeff: The SID is generating the TONES, so that's why you have to hook up the cables. I didn't know anything about the 1902A when the 1660 was designed. Sorry if it caused you inconvenience. The 1670 doesn't need this however, since it is Hayes compatible.

Question: Is it possible to do a "color" bit-map with the 80 Column chip... that has 640\*200 res? From what the Programmer's Reference Guide says, you can have a "color" bit-map similar to the BIT-MAP mode of the VIC (with one color per 8\*8 segment). I know that there is not enough RAM to hold a full bit-map and the 2k Attributes, but if the 16K was replaced with (the proper) 64K ramchip...

Dave: You've pretty much got it right. 640x200 monochrome is possible with the current setup, and it uses ALL of the memory. With more memory, color as you described is possible -- this would require replacing the 2 4416 chips in the C-128 with 2 4464 chips. The 8563 is also capable of 80 x 50 interlaced text display, though the 640 x 400 interlaced mode does not work properly (not that there's even close to enough memory for that!).

Question: What has Commodore got in the works for an encore to the C-128?

Jeff: Dave's been playing with a 256K machine that is C-128 compatible and has a 65C816. Still very preliminary.

Question: I entered a "BANK15" command in direct mode and then entered the monitor to access the graphics Jump table at \$AF6F and got nothing. How do I get to Bank 15 in the monitor?

Dave: The BANK command applies ONLY to BASIC. In the monitor, you've got to prefix your address with the bank you'd like to see. Thus, if I want bank 15, I'd have to type something like D F4000 or whatever (in your case, you'd want AFXx for BASIC JUMP TABLE).

Question: Does the 8502 MPU have any different ML commands (as compared to the 6502)? If so, what are they?

Jeff: No, the 8502 does not have any more commands than that of a standard 6502. The CMOS versions, do however have some extra commands, depending on whose you buy. GTE has some, Rockwell has some more.

Question: Is there a way of programing ml to be able to have fast mode in 40 columns?

Jeff: Nope....not if you want to see the display! The VIC chip is the fly in the ointment. The 80 column chip works in a different way, (i.e.: has its own memory) so that it can run faster.

## TWIN CITIES 128

Available in Minnesota at:  
Computer Stuff  
Computer Exercise World  
Computer Outfitters  
Valiant, Inc.

Available throughout  
the rest of the universe  
\$ 2.00 per single issue  
\$22.00 per subscription (12 issues)

Send your check to:

Twin Cities 128  
P.O. Box 4625  
Saint Paul MN 55104

*Dealer and investor inquiries  
welcome*

Providing quality information since  
January 1986

## Commodore Owners

C-128, C-64, SX-64, Plus/4

Learn how to program your computer in BASIC !

Beginning BASIC programming for Commodore microcomputers.

8 consecutive weeks beginning Wednesday, September 24 1986

6:30 - 9:00pm at Como Park Senior High School Only \$25.00\*

\*plus materials available at Computer Stuff on September 15, 1986

Call Como Community Education at:

**489-4523**

As I said last month, there is a great deal of C-128 public domain software that is starting to surface around the country, and that is great! Unfortunately, however it seems that many BASIC programmers are ignoring a much of the power of BASIC 7.0 in favor of the tried and true, "blood and guts" methods they previously used when writing programs for the Commodore 64 and other machines with limited BASICs. This is truly a tragedy, because as we observed last month often the new commands and structures of BASIC 7.0 can really save memory and execution time, and make your code much easier to understand and work with.

**Things are really SSHAPEing up**

Most programmers are aware of the C-128's bit mapped graphics commands like DRAW, CIRCLE, BOX, PAINT etc. These commands are used to draw figures on the C-128's 320x200 pixel graphics screen. Most programmers are also aware of the C-128's fantastic sprite graphics abilities. However a vast majority of C-128 programmers ignore perhaps the most powerful graphics commands available in BASIC 7.0. These "forgotten gems" are the GSHAPE, SSHAPE, and the SPRSAV commands. What makes these commands so special is that they allow you to store and manipulate graphic data in string variables. This gives the BASIC programmer a very fast, convenient, and efficient means for "editing" sections or even whole graphic screens. Consider the following program (typing it in may help your study of it):

```

100 DEF FNr(x)=INT(RND(1)*x)
110 COLOR 0,1:COLOR 1,7:COLOR 4,1
120 GRAPHIC 1,1
130 CHAR 1,1,1,"watch this space!"
140 BOX 1,5,5,143,16
150 FOR i= 0 to 5
160 SSHAPE a$(i),i*24,0,(i*24)+23,21
170 SPRSAV a$(i),i+1
180 NEXT i
190 FOR i = 1 to 20
200 GOSUB 520
210 FOR j = 0 to 5
220 GSHAPE a$(j),x+(j*24),y,m
230 NEXT j
240 NEXT i
250 FOR i = 0 to 5
260 SPRITE i+1,1,2
270 MOVSPR i+1,100+(i*24),100
280 NEXT i
290 FOR j = 1 to 20
300 SLEEP 1
310 FOR i= 6 to 1 step -1
320 SPRSAV i,a$
330 SPRSAV a$,i+1
340 NEXT i
350 SPRSAV 7,a$
360 SPRSAV a$,1
370 GOSUB 460
380 FOR i =1 to 6
390 MOVSPR i,x+(i*24),y
400 NEXT i
410 NEXT j
420 FOR i=1 to 6
430 MOVSPR i, FNr(360)#(FNr(8)+1)
440 NEXT i
450 SLEEP 10
460 FOR i=1 to 6
470 MOVSPR i,0#0
480 SPRITE i,0
490 NEXT i
500 GRAPHIC 0
510 END
520 x=FNr(200):y=FNr(200):m=FNr(4)
530 RETURN

```

The key to this little demonstration is the ability of BASIC 7.0 to take bit mapped data and store that data into string variables. First the program places the message "watch this space!" with a box around it onto the graphics screen (lines 130-140). Then the message and the surrounding box are stored into a string array via a FOR..NEXT loop and the SSHAPE command (the SSHAPE command stores a representation of an area on the graphics screen into a specified string variable) and six sprites are defined from the newly formed array via the SPRSAV command. (The SPRSAV command performs "double duty"; it is used to transfer graphic data from string variables to sprites OR transfer the graphic data from a sprite to a string variable.) Note, when using the SSHAPE command to define shapes for later use as sprites one must carefully choose the coordinate parameters for the SSHAPE command keeping in mind the 21 x 24 pixel size limit for sprites. (lines 150 - 180). The next section of the program uses two FOR..NEXT loops and the GSHAPE command places our shape data (stored in the array) on the screen at random positions on the screen. (The GSHAPE command places graphic data stored onto a graphics screen. It also has various placement options for altering how the graphic data being placed affects the graphic data already on the graphics screen.) You might want to note how the random positions are being chosen via the user defined function in the subroutine at line 520. Another thing to observe about the execution of this program is how the GSHAPE command's placement options effect how the message is place onto the screen especially in conjunction with already existing graphics data (the placement mode is randomly chosen, see the definition of the numeric variable "m" in line 520). These effects can be very useful when overlapping various images. (lines 190 - 240) The rest of the program demonstrates the power and flexibility of the C-128's sprite capabilities for animation. For a more detailed discussion of sprites and the use of the GSHAPE, SSHAPE, and SPRSAV commands see pages 109 - 123 in the C-128 SYSTEM GUIDE and Chapter 4 in the C-128's PROGRAMMER'S REFERENCE GUIDE as well as the BASIC ENCYCLOPEDIAs in the SYSTEM GUIDE and the PROGRAMMER'S REFERENCE GUIDE.

**In the MID\$dle of it all**

Since we are discussing extraordinary methods of defining variables in this addition of Forgotten BASIC, I thought I would remind you of something Sparrow James brought up in one of his SLICK TIPS a few months back about the insertion of substrings using the MID\$ function. (See page 23 of the April 1986 issue of Twin Cities 128, TIP 0010100) Most BASIC programmer's are aware that the MID\$ function is used to glean substrings from string quantities. However, BASIC 7.0's version of the MID\$ command also allows you to INSERT substrings into string quantities. Sparrow's example demonstrates this:

```

10 A$="comes"
20 B$="Here the sun"
30 MID$(A$,5,5)=B$
40 PRINT A$

```

This quirk can really be beneficial for writing string replacement and editing routines.

Sparrow's Slick Tips: The art of taking your C-128 farther, faster. Each issue our resident hacker, Sparrow James, brings you new innovations which will help you use or understand your C-128. Sparrow is always looking for new ideas, so if you have a tip or even an idea for a tip, why not help Sparrow out. Just send your tip or idea to: TWIN CITIES 128, P.O. BOX 4625, SAINT PAUL MN 55104 or call our BBS, TWIN CITIES 128 ONLINE, at (612) 645-6482, 24 hours a day, 300/1200 baud, and leave feedback to the SYSOP.

00100110: BRING BOB BACK TO NORMAL Being a SYSOP and an avid telecommunicator, I really appreciate a full featured telecommunications package like Bob Letini's BobsTerm Pro. In fact, I cannot think of a better terminal emulation package. However, amidst all of the wonder bells and whistles of BobsTerm Pro there is one major irritation, namely, Mr. Letini has created his own character sets for displaying text and other information. I have found the display fonts somewhat difficult to read. Fortunately, BobsTerm Pro is so comprehensive that it allows you to add your own character set for use inside the program. You could use a standard character set editor to edit an existing font to your liking, but there are a few caveats you must be aware of. First the character sets in BobsTerm Pro are in standard ASCII order and not PET ASCII order, and second BobsTerm uses several specially defined characters which display control codes and graphic borders which really should remain intact. With this in mind, I have written the following program which creates a new character set on a BobsTerm disk which contains all of BobsTerm's special characters but replaces the alphabetic and numeric characters with ones from the C-128's normal character set. The new character set can be used directly within the program itself or can serve as a basis for further modification through the use of a character set editor. Programmers may want to note the use of location 215 (line 100) to check which display the user is using and the error trap in line 190. Also, if you run this program using a 40 column display you will get to see the actual character set translation being implemented since the translation takes place on the 40 column graphics screen.

```
100 IF PEEK(215)=128 THEN sc=5:ELSE sc=0
110 PRINT "place a bob's term pro disk in the drive and hit a key."
120 GETKEY a$:GRAPHIC 1,1:TRAP 190
130 BLOAD"character set.0",pl1392:BSAVE"char rom2",bl4,p55296 to p57344
140 BLOAD"char rom2",p8192
150 FOR i=8200 TO 8407:POKE i+3968,PEEK(i):NEXT i
160 FOR i=8712 TO 8919:POKE i+3200,PEEK(i):NEXT i
170 FOR i=8576 to 8664:POKE i+3200,PEEK(i):NEXT i
180 BSAVE"character set.7",pl1392 to pl3440:GRAPHIC sc,1:SCRATCH"char rom2":DIRECTORY:END
190 IF ds=62 THEN GRAPHIC sc,1:PRINT"wrong disk!":SLEEP 3:GRAPHIC sc,1:GOTO 110
200 GRAPHIC sc,1:LIST:PRINT:PRINT"disk error: ";ds$:DCLEAR
```

00100111: CALCULATED RESTORE As most of you who read Twin Cities 128 regularly are aware, there are numerous advantages to programming in the C-128's BASIC 7.0 over C-64 mode's BASIC 2.0. Here is another advantage that many programmers are not aware of. The RESTORE command (the command which resets the available data pointer for the READ..DATA structure) has been enhanced in BASIC 7.0 to allow you to RESTORE from DATA in a specific line in addition to the blanket RESTORE of old. This means the cunning programmer can use actual program lines in a BASIC program more effectively for mass storage. In fact, by using some kind of dynamic keyboard routine to add/insert data into a BASIC program it is conceivable that one could write a fairly comprehensive "self-contained" database manager for all kinds of applications (remember with the C-128 you have almost 60k available for BASIC text). Consider the implications of the following example (you might also note the use of the PRINT USING command in the last line):

```
10 DATA Harold,Male,Programmer
20 DATA Curt,Male,Software Retailer
30 DATA Avonelle,Female,Magazine Editor
40 DATA Gary,Male,All around good guy
1000 INPUT"Retrieve data on which individual (1-4)";dp
1010 RESTORE (dp*10)
1020 READ N$,S$,O$
1030 PRINT USING "Name:#####Sex:#####Occupation:#####";N$,S$,O$
```

00101000: SUPERBASE SNAFU As many of you Superbase 128 users who are manipulating large databases on the ever loving but sometimes "flaky" 1571 may have already learned there is a severe bug in the program which can cause a rather serious catastrophe when the database gets large enough to "spill" over onto the back side of the disk, especially when using an operation which involves the manipulation of a sequential file such as a FIND or a SORT. The problem (according to Precision Software) has to do with Commodore's deviation from the original design specifications released to Precision on the 1571. Fortunately, Commodore will soon be marketing upgrades of the 1571 ROMs (and new C-128 ROMs) to end users that will correct this problem. Twin Cities 128 will be acquiring these upgrades soon and we will be sure to let you know about their effectiveness. In the interim it is probably best to avoid the second side of a 1571 disk (i.e. format the disk as a single sided disk).

00101001: FILLING YOUR BIT MAPS The C-128's built-in monitor can really come in handy even if you are not a machine language programmer. I have found there are times when developing a graphics screen (or importing one from a program like DOODLE) it is necessary to change the background color of the bit map. This is easily accomplished by simply entering the monitor (press the F8 key or type the word "MONITOR"), then entering the following: F +7168 +8191 +01. Upon exiting the monitor by typing X and return and examining your bit map, you will find that the background color has been changed to white. By changing the last value you can specify which color you wish to change the background color to.

# Insider's Insights (on the outside)

What you on the outside need  
to know about the inside.

## 1. Submission Guidelines

If you are interested in having an article published in Twin Cities 128, please keep the following in mind:

A) We don't have "big bucks". If you are in search of large financial remuneration, you probably ought to look elsewhere. Writers who submit material of superior quality will receive a Twin Cities 128 T-shirt and/or \$10.00 (after August 1, 1986) for their efforts. Twin Cities 128 will also on occasion commission articles from experienced authors for negotiated fee in advance. We understand, first hand, how much time and effort it takes to produce a good article, and for that reason we want to assure you that wher/if we ever begin rolling in the "big bucks" you as a past/present contributor to Twin Cities 128 will not be forgotten.

B) We are already overworked. If you want to see your stuff in print, don't make our lives difficult. First, use a decent C-128 mode word processor to create your documents such as: Paperclip, Pocket Writer (formerly Paperback Writer), Superscript, Vizawrite, or Fleet System 3. Please do not send us material created with CP/M word processors or worst of all Speedscript. Second, please proof your copy before you send it to us, we don't like to guess what language you are using. Third, send us both a hard copy and a disk copy of your article(s). By sending us both a magnetic copy as well as a hard copy in theory we should not have to re-enter your work into the computer, but just in case the post office decides to blast your mailer with electromagnetic or gamma radiation at least we will have the hard copy of your material so your postage won't be wasted (if you would like your disk returned, you must enclose return postage).

C) Get to the point. Let's face it, style counts, but every extra word costs us money we don't have, so try to be BOTH complete AND concise. Only our managing editor is allowed to ramble on, and even he gets his stuff chopped to shreds by our ruthless associate editor. (Our average article runs about 120, 60 character lines.)

D) We encourage articles about programming but not type-in programs. We have come to the conclusion that type-in programs are a real drag and are an incredible waste of space. When writing an article about programming techniques it is good to provide program examples, but keep them short. We believe our readers have better things to do than type in thousands of lines of code from a magazine. It is much better to inspire someone to write an original program with your idea, rather than turn them into mindless scribes because you got carried away.

E) All articles upon submission become the property of Twin Cities 128, unless individual ownership provisions are discussed and agreed to prior to submission, or are included as part of the article.

## 2. Reprint Policy:

Twin Cities 128 is a copyrighted publication. Twin Cities 128 reserves and retains all rights to material published in each issue unless so stipulated within an individual article. Reprinting, duplicating, or reproducing of any material within Twin Cities 128 is forbidden without the advance express written permission of the managing or associate editor of Twin Cities 128, or unless permission to do so is granted within an article.

**USERS GROUPS THIS MEANS YOU! YOU MAY NOT REPRINT TWIN CITIES 128 MATERIAL IN YOUR NEWSLETTERS WITHOUT PRIOR CONSENT TO DO SO.** To obtain permission to reprint, write TWIN CITIES 128, P.O. BOX 4625, SAINT PAUL MN 55104.

## 3. Our Statement:

Twin Cities 128 is not affiliated with Commodore Business Machines, Commodore International, or Commodore Computers Ltd. Twin Cities 128 is also not affiliated with any users group or organization, or software developer or producer.

