TWIN CITIES 128
THE COMMODORE 128 JOURNAL

AMIGA TO BASIC 8 GRAPHICS
COLOR MEGA-HIRES GRAPHICS
1581 VECTORS EXPLORED

Reviews:
Solderless VDC RAM upgrade
The Write Stuff 128
Q-Disk

and much more!

Twin Cities 128 is North America's only Commodore 128 specific publication. Since January of 1986, Twin Cities 128 has evolved into the source for C-128 usage and programming information. A fact which prompted INFO magazine to write, *"If you are serious about using or programming your C-128, you need this publication!"* (INFO magazine, Issue #17, Page 22). Twin Cities 128 attracts some of the bri st talents in the Commodore world to contribute to its pag ng such notables as: Fred Bowen (Commod ineer and C-128 co-designer), Bruce Jaeger (noted d reviewer whose works have appeared nodore magazine, Compute!, and RUN ghy (Frequent contributor to

(. mer) and Loren Lovhaug,
reg gazine columnist, and
Qua litionally,
that th with Twin Cities 128,
area on ge the C-128
and secon ommodore specific,
 ations network.

Over the past Twin Cities 128 has been the first, and in mos ly publication, to cover such important C-128 ments such as: the release and obtaining of the Commodore 128 and 1571 upgrade ROMs, the release and usage of the Commodore 1581 disk drive, using and expanding VDC RAM for spectacul hics on the 80 column screen, the release and usa and most recently, the debut of "Mega-Hires" 8 which allow onscreen bitmapped graphics t of even the Amiga! Also found as a e of Twin Cities 128 are features on r productivity software such as Series, and Paperclip III; plus an views and opinion articles.
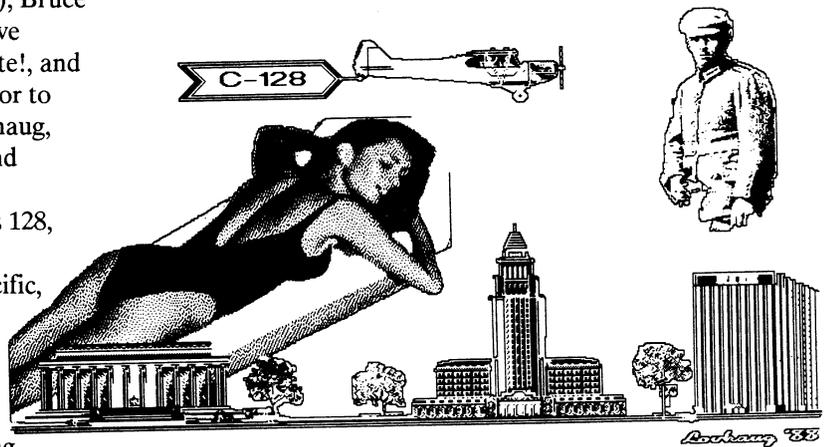
 ng now have not informed you revious paragraph, you owe it to out Twin Cities 128. Simply fill out us flyer and return it to the address We think you will be very glad you did!
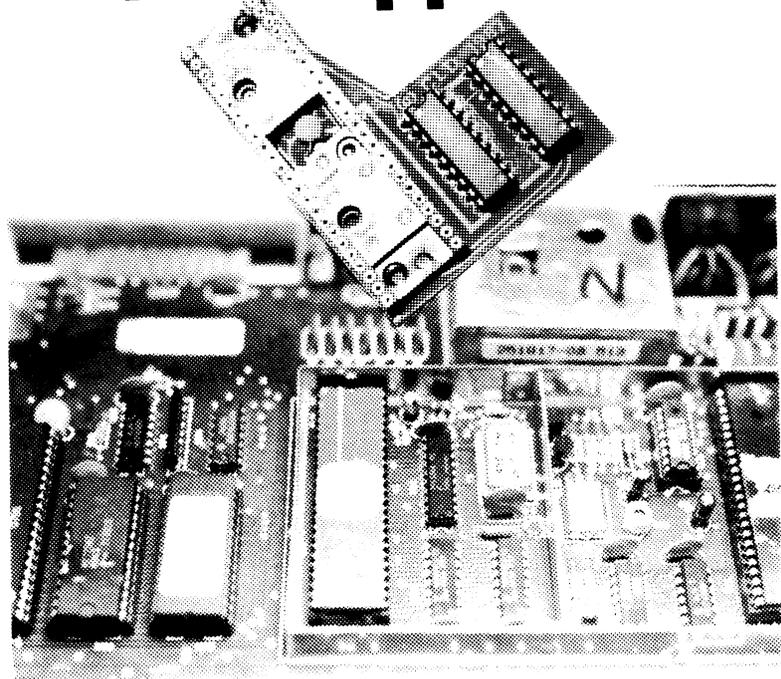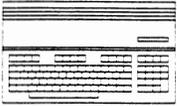
N CITIES 128

P.O. BOX 4625

SAINT PAUL MN 55104

Also check out our section on Q-Link in the Hardware Groups area of the Commodore Information Network.

COMMODORE BUILT IT...
We Support It !

Miscellaneous Information

by Avonelle & Loren Lovhaug

TWIN CITIES 128: THE COMMODORE 128 JOURNAL

<u>Our Digital and Silicon Cast</u>

Information Processing Engines:
Commodore 128 computer, Commodore 128D computer, Tandy Model 100 portable computer (Loren on the bus), Datavue Spark portable computer (Avonelle at work), Amiga 2000 computer (database...only when we have to), Franklin Spelling Ace Computer
Mass Storage Devices:
Commodore 1571 5.25 inch floppy disk drive, Commodore 1581 3.5 inch floppy disk drive, Commodore 1750 RAM expansion Unit
Printed Output Engines:
Okidata Laserline 6 Laserprinter, Star Micronics NX-1000 Dot matrix printer
Video Displays:
Commodore 2002 RGBI/A/NTSC video monitor, Commodore 1902a RGBI/NTSC video monitor, Comrex CR 5400 monochrome monitor
Interface and Communications Devices:
Commodore 1351 proportional mouse, Commodore 1670 modem, Xetec Super Graphix Printer Interface, GeoPrint printer cable
Information Processing Software:
PaperClip III, from Electronic Arts, Pocket Writer 2 and Pocket Planner 2, from Digital Solutions, BASIC 8 from Walrusoft, Superbase 128 and Superbase Professional from Precision Software, Bobsterm Pro 128 from RML labs, Big Blue Reader from SOGWAP software, The Write Stuff 128 by Busy Bee Software, Disk Whiz v1.1 by Kevin Hisel

Attention: If you are a highly literate, incredibly competent, good-looking, hard working, all american type, run for political office. Otherwise, if you have something to say you think somebody in the C-128 world might be interested in reading, consider dusting off that word processor and typing up something for us. Keep in mind that we can't publish dirty jokes, thoughts about your mother-in-law, or your epic on whale spawning. However we hope that you will indeed consider sending us your favorite C-128 programming tricks, usage strategies, and tutorials. You will be paid somewhere between $5 and $5 million dollars for your submission. The average article in this issue netted the lucky author $20.

Now go back and read between the lines. Yes, we would very much appreciate you sending us your work for inclusion in our publication. We can't afford to pay big dollars for your work, however, our publication is read by many people who can, and submitting something to us could just be the springboard you need to land an assignment from RUN or INFO and other big-timers. That's how they noticed Loren. They may notice you.

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Q-LINK: LOVHAUG
GEnie: Sparrow.J

RUMOR/OPINION/MAYHEM

by Loren Lovhaug
TESTING YOUR FAITH?

A couple of days ago I was speaking to Paul Gernhardt, the Producer of the Commodore Information Network on Q-Link concerning our C-128 area on Q-link. Somewhere in the conversation Paul inspired this column by saying:

'I respect your views on the 128 because, although you have a vested interest in the C-128 you understand that there are other computers which are better suited for certain tasks than the 128 and are a better value for some people. That kind of honesty and good sense is what makes you a credible journalist, and not just a C-128 zealot.'

I found myself dwelling upon Paul's words and I realized that I had never shared the thoughts that prompted Paul to lavish those kind words about my integrity with you. So since I have always tried to be candid and outspoken on these pages, I'll take this opportunity. You see, in my position a lot of people ask me, "What computer do you recommend for me?" Of course, they fully expect me to reply like some pre-programmed zombie, "The Commodore 128D", but to their surprise, I rarely do. My first response almost always is something along the lines of: "What do you want to do with your computer and how much you are willing/able to spend?" It's their answers which determine my response, not my bias towards a machine or a brand; in fact sometimes *neither* the 128 nor Commodore even enter the conversation.

At this point I can visualize a hoard of you circling me like the cowboys in that "picante sauce" commercial, looking for a rope, ready to lynch me for my blasphemy. But the truth is the C-128D is not the ideal machine for everybody. This is not to say that it is not a good choice for a lot of people, but to be a real C-128 expert you must understand both what the 128 is and not capable of.

WEAKNESS

We usually don't discuss the C-128's weaknesses in Twin Cities 128. Yes, as hard as it might be for us to admit, the 128 does have a few. In reality these weaknesses are more or less symptoms of age than outright "flaws". The biggest weaknesses I see in the C-128 lies in its processing speed and its the lack of affordable large-scale mass storage. Perhaps the C-128's situation is somewhat analogous to that of an aging professional basketball star like Kareem Abdul Jabbar. There is no doubt that Kareem is one of the greatest players of all time and that he can go on playing pro basketball as long as he remains healthy and interested, however it is obvious that time has taken a toll on his speed and endurance. Likewise, time in concert with the incessant march of technology has rendered the C-128 a step slower and in some cases less adequate.

Let me relate a specific example that Avonelle and I recently were forced to deal with. As I described in issue #21, Twin Cities 128 has been in a state of hypergrowth since the early part of the year. This has put a great deal of strain on our human and computational resources. About two months ago we outgrew the capacity of the 1750 REU. Once we outgrew the REU, searches with Pocket Filer 2 (we would have preferred using Superbase 128, but long ago we outgrew 1571 drive and the 1581 version of Superbase was only recently made available) even on the faster 1581 drive became unbearably slow. A month later we found that we were approaching the limit of a 1581 disk! We realized that what we needed was a hard drive. Unfortunately that left us with a rather uncomfortable dilemma. There are only two hard drives available for the C-128, both of which are prohibitively expensive and not all that compatible with the C-128 system.

So here were our choices: Sink $900 into a rather smallish 20 megabyte C-128 hard disk that offered the potential for a variety of hardware and software incompatibilities, or purchase another type of computer system where hard drive storage was less expensive and better integrated with the computer's operating system. If you look at the situation realistically you can see the choice is not all that difficult. For $900 these days you can quite easily finance an 8 megahertz 512K IBM PC XT clone complete with most necessary cards and a 30 megabyte hard drive.

(We did not however go the clone route, instead we picked up an Amiga 2000. The sixty megabyte hard drive we placed in the Amiga with controller cost just under $600. By the way, for the curious, we opted for the Amiga 2000 over the PC clone, even though it was a lot more expensive because of: 1. The similarity between Superbase Professional Amiga and our long time friend Superbase 128, 2. We work and are familiar with the Commodore world and not the IBM world, and 3. We frankly saw more potential for making the C-128 world better through the Amiga than we did in the IBM PC, as evidenced by the Amiga to BASIC 8 graphics converter in this issue of Twin Cities 128. Just in case any of you think that I am going to jump ship on you...think again! I have been and remain a C-128 guy! If I could have hooked 60 meg drive to my 128 for $600 I would have done so in a second!)

The immediate knee jerk reaction to this dilemma is to blame Commodore for the lack of an affordable hard drive for the 128 or its lack of blinding speed. But that is simply not fair. During early 1985 when the C-128 was designed, hard disk units and fast processors were still prohibitively expensive. In fact it is these very facts that made the 128 stack up so well against the $1700 4.77 megahertz IBM PC, the $2495 Macintosh Plus and the $1795 Amiga 1000. And while I think it is fair to assign blame to Commodore for not emphasizing the C-128, especially when it comes to encouraging third party developers to develop native mode products, we surely can't suggest that Commodore has ignored the 128 from a peripheral standpoint. Or did you forget the: 1902 and 1902a monitors, the 1571 disk drive, the 1670 modem, the 1700 and 1750 RAM Expansion units, the 1350 and 1351 mice, and the 1581 disk drive?

STRENGTH

So what makes me so excited about the 128 and thrilled to publish North America's only Commodore 128 specific publication? Here it is: the C-128D is still more than enough computer for most folks. Sure, it can't handle the computational chores of corporate America, but so what? Unless you manage a database of more than three thousand records, or need to recalculate a 25,000 cell spreadsheet you are probably humming along quite well with the 128. Bigger and faster is simply not always better. As an example, we 128 owners seem to be able to write quite well without a port of the industry standard, WordPerfect, in my estimation a clumsy and unnecessarily overcomplex program to use. One does not need a program that supports virtual document sizes in the thousands of pages, if you never write anything over 20 pages; or proportional spacing and binding width support if you are not about to start a publishing company in your basement. At five times the price of Pocket Writer 2, Paperclip III, the Write Stuff, and Superscript, it doesn't hold a candle to these packages for ordinary folks. You see, the reason Paul respects my views, and the reason I can both recommend 128 to some people and not to others is that I realize that the 128 is a home and hobbyist computer. It is a machine that makes sense for a group of people with modest incomes, a specific set of needs, and a desire to learn, experiment and tinker for years to come. You are those people, and we are your information resource.

by Avonelle and Loren Lovhaug

NEW RELEASES

1581 Superbase 128 Upgrade now available
Yes that is right, the long rumored update to Superbase 128 with 1581 support is now available from Precision software's new U.S. office in Irving Texas. We have had our update for a week or two and it is nothing short of fantastic (more on this in issue #23). The update is available in two forms, Superbase 128 version 3.0/5.25 boots off a 5.25 inch disk, but supports both the 1571 and 1581 as data drives, Superbase 128 version 3.0/3.5 boots off the 1581.

Besides 1581 support, version 3.0 also adds support for importing and exporting to multiple drives, as well as a few minor bug fixes. Current Superbase owners should send in either your Superbase 128 disk or the first page of your manual with $25 to:

Precision Inc., 8404 Sterling St. Suite A, Irving TX 75063
ATTN: Superbase 128/1581 upgrade

For more info, you can call: 214-929-4888

More eighty column graphics tools
Free Spirit Software Inc. has released Sketchpad 128, a complete drawing system designed for the Commodore 128 and 1351 mouse. Sketchpad 128 takes advantage of the crisp 80 column graphics capabilities of the C-128. Among its many features are:

-- smooth freehand drawing
-- lines, boxes, rays, circles and arcs
-- wide selection of drawing tips
-- 100% menu driven
-- 640 x 200 pixel drawing screen
-- 3D solids - spheres, columns, donuts and spools
-- Enlarge, scroll screen and Slideshow options
-- shaded fill patterns
-- many fonts provided
-- clip art features (including Cut and Paste)
-- full printer support
-- use Print Shop graphics directly from Print Shop disks
-- 100% Basic 8 compatible (fonts, graphics, and drivers)
-- no copy protection

Users with 64K Video RAM can also enjoy:

-- pixel editor
-- grid maker
-- advanced drawing modes (such as Air Brush)

Sketchpad 128 can be used to create 80 column artwork, slideshows, signs, posters, letterheads and many other uses. Sketchpad 128 requires a Commodore 128 or 128D computer, a 1351 mouse, a 1571 disk drive and an 80 column RGB monitor. A second disk drive and 64K video RAM are optional. The 1581 disk drive is fully supported.

Sketchpad 128 retails for $29.95

Free Spirit Software Inc., 58 Noble St, PO Box 128, Kutztown, PA 19530, 215-683-5609, 800-552-6777

Please note the new mailing address and phone numbers!

Are You a Yodahead?
Yodahead Software is now marketing two new products for the C-128. Dragonfire BBS 128 is an 80 column BBS package which supports 300/1200/2400 baud modems, up to 100 public message boards, full auto maintenance mode at Midnight, and self maintaining message bases. It also features: full E-mail,

PRICE & PROGRESS REPORT

ASCII and graphic output, 58 assigned action codes, custom new user set-ups, transfer limiting by blocks and/or credits, downloading through directories or sysop created indexes, online printer support during auto maintenance and sysop modes, full editor capabilities for menus, sequential files, and users, graphic mode option, ICT hard drive support, 1581 and IEEE support, online module capabilities, mail and message error trapping, and free updates and back-up disk. Dragonfire BBS 128 retails for $75.00.

The Rings of Chaos 128 is a role playing adventure game which is a separate module of Dragonfire BBS 128. Its features include: up to 25 players per game, 55 rooms, rainbow prompts, adjustable configuration file, sysop mode, automatic system files, and ready made online information files in both ASCII and Graphic mode. It is priced at $25.00. We are currently evaluating both products for a review in an upcoming issue of Twin Cities 128. At first glance, however they look very good.

Yodahead Software, P.O. Box 177, Marlton, NJ 08053, 609-596-1772.

Who you gonna call?
Spectrecide, a game for the C-128 in native mode, has recently been made available by Nightstalker Software. The game is arcade style, and run with your joystick in port 2. Nightstalker Software does not currently accept credit card orders, or payment by personal check, only money orders and certified checks. The cost is $20.00. For additional information, contact L.K. Snyder, Nightstalker Software, Rt. 1 Box 5f, Elfrida, AZ 85610.

Quality RUN Magazine Software!
Ordinarily, I am not all that impressed with the type-in programs published in the big time glossy magazines (except the ones I write of course!), However, RUN recently released two disk sets of never before published programs which I must say are first rate and worth consideration (no, none of my stuff), especially since the vast majority of the programs and data on the disks are applicable to the C-128 in native mode.

The first package, entitled RUNworks, is a selection of productivity software, which are gems at a couple of dollars each. For $24.97, you get:

1. RUNPaint--full-feature paint and drawing program
2. Money Manager--for business and home
3. Label Base--create address labels
4. RUNTerm--a telecommunications package
5. RUNShell--disk utility
6. Graphmaker--create 3-D bar graphs
7. Formwriter--forms design

The documentation for the packages are good, and RUNpaint and RUNterm in particular are excellent.

To order, write: IDG Communications/Peterborough, Attn.: RUNWorks, PO Box 802, Peterborough, NH 03458.

The second package is called the GEOS Power Pak, is a collection of useful GEOS desktop accessories, utilities and applications by GEOS experts Susan Lamb, Tom Trevorrow and Shaun Jones, Joe Buckley and Wayne Dempsey, all assembled on one disk. Included are nearly two dozen original fonts and over 100 photo-scraps to use with GEOS. The best part of all, is that all of the picture and font data, and most of the programs are GEOS 128 compatible. If you are even casually into GEOS, this package is definitely worth condsidering.

To order, call 1-800-343-0728, or write to ReRUN, 80 Elm St., Peterborough, NH 03458. The GEOS Power Pak is available for $24.97. Use check, money order, MasterCard, American Express or Visa.
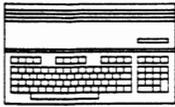
PRICE & PROGRESS REPORT

Continued from page four...

MORE NEW RELEASES

CP/M Facelift!
Plu*Perfect Systems has announced several new products available for the C-128 in CP/M mode. DosDisk allows CP/M users direct access to MS-Dos disks, by convincing one of your disk drives to think like an MS-Dos drive. After the program is run, other applications can be run as usual, using the MS-Dos drive to save data on an MS-Dos formatted disk. In this way, the disk can be later used on an MS-Dos system. The program features direct, time-stamped access to PC files (both root and subdirectory). Suggested retail price: $30.00 preconfigured version, $45.00 kit version.

Z3Plus is an upgrade to CP/M for Z80 computers. Z3Plus installs on the C-128 automatically, and runs without special configuration. The new operating system is downward compatible with your traditional CP/M system, so you can be up and running immediately, but does includes numerous new features borrowed from a variety of operating environments. Some of these new features include: an alias system so that the user can define new command names, and built-in functions for viewing printing, copying, deleting and renaming files at the touch of a key. The system is almost limitless in potential and is highly user configurable. This system really does bring CP/M into the 1980s! (Call or write for latest pricing)

JetFind is a search utility for CP/M files. It allows the user to search for word, phrases or expressions in all types of files: ASCII, Wordstar, library, crunched, and squeezed. (Call or write for latest pricing)

Plu*Perfect Systems, 410 23rd St., Santa Monica, CA 90402, 213-393-4584

Cheap and worthwhile CP/M disk
As a service to the many Commodore 128 owners who write to Cranberry Software Tools, they'd like to announce the availability of a very special public domain diskette, which includes a variety of useful programs such as:

-- NEWSYS.COM generates the 12/6/85 version of CP/M 3.0
-- CONF.COM is a CP/M configuration utility
-- CCP.COM the famous CCP104 upgraded command environment
-- HIST.COM command line editing accessory

A total of 21 files are supplied, including powerful CP/M file management utilities such as ACOPY, CSWEEP, and NSWEEP. Limited documentation is also included.

By using the CCP104 environment instead of the one supplied with the C128, you get access to a whole new range of capabilities, including the ability to recall your old CP/M command lines, edit them, and then re-execute; easy use of CP/M user areas, and named reference to user areas.

Why do they offer this service? They suspect that many C-128 owners are still running older versions of Commodore's CP/M, with no access to updated software. To these individuals, and to all C128 users seeking a more flexible and powerful CP/M, they are happy to extend this offer. They hope that you'll appreciate their level of concern, and consider with favor their catalog of word processing and programming utility products.

The cost of the C128 CP/M upgrade diskette is just $5.00.

Cranberry Software Tools, PO Box 681, Princeton Junction, NJ 08550-0681

OVERHEARD

Lou Wallace says that the development of the exciting new 100% assembly language 80 column paint package that he and master programmer **Dave Darus** are working on is proceeding well. Lou modestly calls it simply the most sophisticated paint package ever developed on an eight bit microcomputer, and given what he has told me about the package I believe him, just take a look:

-- read and **WRITE** capabilities in the following formats: BASIC 8 and **GEOS**, plus read only capabilites for Doodle, Print Shop, and Koala. With Macintosh and Amiga graphics formats being considered

-- bit-level cut paste capabilities (no more color cell limits on cut and paste)

-- the ability to dab in colors to areas, including a limited search and replace facility

-- virtual canvas support into the thousands of pixels

-- both 16K and 64K video RAM support as well as RAM Expansion Unit support

-- and much, much more...

I am hopeful to see my first glimpse of the package at the World of Commodore show in Philadelphia, on November 3-6, 1988. If all goes as planned the as of yet unamed paint program should be ready in early 1989.

Also in a graphics vein, **Brian Dougherty**, CEO of Berkeley Softworks during a recent coversation told me that there will indeed be a GEOS 128 version 2.0, bringing the C-128 version of GEOS up to snuff with the latest C-64 and Apple versions. Look for it in February or March 1989.

Fred Bowen, Commodore's guardian of the eight bits, and frequent contributor to these pages, is as of this writing just putting the finishing touches on a new version of the classic VT-100 terminal program that is packaged with the 1670 modem. The version promises better VT-100 compatibility, the ability to transfer and receive data at speeds beyond 2400 baud, and full RAM Expansion support. Also being beaten on by Fred is a special KERMIT protocal compatible terminal program, which runs in 64 mode, but uses the C-128's 80 column screen if you are using the program on the C-128. Both of these programs are going to be placed on an updated 1670 modem disk, and uploaded to Quantum Link as well.

Speaking of Commodore, when will **Jim Gracely**, and the rest of the gang at Commodore Magazine wake up and start including the C-128 in their annual graphics contest. For the third straight year, the house organ has seen fit to include only the 64 and the Amiga in their contest. Ironically this snubbing takes place in a year when many incredible, previously believed to be impossible, graphics developments have surfaced on the 128, including the whole Mega-Hires graphics story which we have been covering in our last three issues! Now that we have learned that the C-128 has an interlaced monochrome graphics resolution beyond that of the Amiga, isn't it time they took a look. Hey, Jim (and everyone else) to see what you are missing, log onto Q-Link and go to my Lovhaug's Specials library and download the laceview program and all the LACE. series of pictures!

And lastly, after a summer long shortage of 1750 REUs, it appears that several outlets are now getting some. I have reports that many Sears stores now have 1750s back in stock, and **Joe Hubbard** at Briwall tells me that they have received an order of 400 RAM Expanders that they will be selling for $179. For those of you who have been searching hi and low for an REU this truly is progress!

THE 128 MONEY TOOL

by Tom Schlechte

Editor's note: The following article was submitted to us upon by the author after he wrote us complaining about the lack of coverage, and inaccurate coverage in other Commodore oriented publications of financial software for the Commodore 128. We could tell from Tom's letter that he had some strong feelings about using the C-128 as a money making tool, so we asked him to put together a piece for us describing his experiences and preferences. Tom claims to have spent many years as a broker for a well known NYSE Member Firm and to be an owner of a successful medium size business that uses Commodore 128's exclusively to conduct both his office and personal investment activities. He claims that: "Employee training time is reduced by using 128's, and the cost/benefit ratio over 16 or 32 bit machines is much greater, while the maintenance is minimal and inexpensive." While we have made no effort to verify any of his claims, we have no reason to believe they are false. We must admit however that we are total neophytes when it comes to the financial and investment world, and we can accept no responsibility for the results of financial decisions anyone might make as the result of reading this article or using the software described therein. The sole reason for publishing this material is because we found it interesting and entertaining, and thought most 128 owners would as well.

The Money Tool

Ever daydreamed in front of the monitor about peripherals, software, unlimited plus time on Q-link, and other goodies only to wake up to the reality that your wallet wasn't as big as the dream? Have you considered that you could make money, have fun, and not even move from the monitor? Too good to be true? Maybe yes, but, just maybe no!

What follows is a review of a few relatively obscure C-128 Personal Investment Programs. Big money is not important to use them nor is the age, sex, or education of the user. One of the better kept secrets in the securities industry over the past thirty years is that any fool could raise a considerable amount of cash without any money up front simply by socking away the price of a pack of cigarettes a day, a large coke, or a couple of Reese's Peanut Butter Cups. If you don't believe that, try the following experiment:

$25 per month (less than a buck a day) invested at 12% interest generates more than $20,000 in 20 years. For you sharpshooters: don't forget that's compound not simple interest.

You could have done that in practically any Mutual Fund all you had to do was open an account. It could even have been done by mail. The same $1 a day investment would also create a retirement fund of over a QUARTER of a MILLION dollars if you started it at age 25. And, folks, this is about as riskless as anything in life can be.

Why then is so little investment software available? And why is some of it mediocre? The main reason is that programers don't get rich selling low price, non office, productivity packages. Unfortunately, game software and overpriced laser printer-compatible desktop publishing packages the popular rage these days, both here and in the MSDOS world (as well as the other computing flavors).

So where does this leave us? Well, fortunately there are programs available that, although imperfect, are useful and even entertaining, particularly if you have a little money to play with (having money is always nice). But before we talk about the software, first a talk about the game itself.

About The Game

It doesn't take too much talent to buy a stock or mutual fund, while it does, however, take talent to be able to recognize when to sell it. Magazines, brokers, newspapers and libraries can help with the former but not much with the latter (if they could, everyone would be rich and retired).

Here are some common investment choices: Growth type no-load mutual funds is one, common stocks are another (if you have the stomach for the action). The above approaches really don't require all that much research, particularly with the funds since their portfolio managers normally know more than most of us about the stocks in which they have an interest. Our function as investors then becomes one of timing sales so that we cut our losses short and maximize the gains on the better investments. Remember, we're not looking for the absolute highs or lows just somewhere in the ballpark. It is also not necessary to find a long run of consecutive winners, the race track has better odds on doing that. The key is to pick something that moves up and down and doesn't just sit like a lump.

Lastly, we have to make an important assumption that a stock, mutual fund, or other investment develops its own personality i.e. that different groups of people play different investments and in the process each investment develops a consensus personality of the individual stock holders. The result is that some stock moves have a statistically predictable behavior that may bear no relationship at all to what the stock market is doing or to the basic value of the company.

The Software

Now, the software: to play the game, we need two types of programs: one to to help us do the paper work and organize our data, and another to help us make decisions; it is unfortunate but you are unlikely to find one that does both well. If you search catalogs of 128 programs available you'll find less than a dozen record keeping programs and about a dozen selection or technical buy-sell programs. For record keeping we tried to find a program that wasn't difficult, had a good report generator for lists of quotes, updates of unrealized gains or losses, statement of dividends and interest, cost and proceeds of transactions, and some kind of audit trail. In other words a bookkeeping program that doesn't take an accountant to operate. For the decision-making package we want something that is technically accurate and fun to use. I also believe that such programs should be able to run on a single 1571 without an REU, without requiring us to become professional disk swappers, and lastly it should not be copy protected.

For keeping the books the only program that has come close to the criteria so far is *Personal Portfolio Manager 128* by Abacus. It is a good program that for the $39 discounted price is quite nice once you get used to it. The manual is it's major weakness: it was written almost as if it were an afterthought. However, once you decipher the manual it is automation at it's best, since you set it up to do auto quote retrievals on national telecommunications networks that will not only download current info but will update all portfolio records and reports without touching a key. You don't even have to understand modem software or even how to use a buffer because this jewel does it all (you do have to plug in your modem). Just tell it what time of day to do the auto retrieve, and update the disk, and you will have reports waiting on the printer when you want them. It make you downright lazy! (my kind of program).
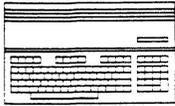
...Continued from page six

The decision making program that meets most of my criterias is *Strategist 128* by Strategy Software (Box 14-2403, Anchorage, Ak. 99514). The price is right too at $29.95. This package takes a couple of nights of concentration on the manual, plus about two hours or so with a tutorial, and an hour or two to input each individual stock or index that you might be looking at or own. You need 4 or 5 years of weekly closing quotes which can be retrieved on networks like Compuserve or Warner. If you don't do it online, plan for a long session at the library. Online you can pull the info off of Compuserve for about $13 per stock for a five year summary and at about half the price or a little more on Warner. Since you only have to do it once on each stock, the expense is minimal. Although many other telecommunications services offer stock quotes and histories, most don't go back the required five years.

The following examples of the reports generated by Strategist and PPM are fairly self-explanatory; it's these reporting features that make the programs fun and easy to understand. They were also the deciding factor for my keeping these two programs. In the case of PPM, it was boxed up to return because the manual was so poor, until I saw the reports. Only after putting down the manual and going to the menus did the program start to make sense.

Let's look at PPM's standard reports:

```
Quotes - Portfolio: Sample 12/31/87
-------------------------------------------------------
Symbol/Description/Type/Stop/Target/Prev/Last/Change/%Ch
-------------------------------------------------------
GM    Genl Motors Stk  70    90   74.25 76.50 2.50   3.38
```

Note: Column headings don't have slashes and are spread to 80 columns on screen, instead of the reduced size above. Also, all of these reports do totals at the bottom which are not shown in these illustrations.

Stop (Sell) and Target Prices are your own personal limits. Previous, last, and change columns are daily, weekly, or monthly, whichever you prefer. The last 4 columns are the ones that can be automatically updated by modem. Quotes can also be manually entered from the newspaper.

```
Unrealized Gain/Loss - Portfolio: Sample
John Doe 12/31/87
-----------------------------------------------------
Type Symbol Buy/SS Units Cost  Value G/L  %G/L  S/L
-----------------------------------------------------
Stock GM    Buy    50.00 3951. 3825. -126. -3.2  -3.2ST
```

G/L is gain or loss & S/L is a holdover from the old short or long term holding for taxes which could be designated. All data here represents what your current holdings are i.e. a snapshot of your portfolio, can be auto- updated.

```
Income - Portfolio: Sample   John Doe 12/31/87
-----------------------------------------------------
Inc  Type   Symbol   Sec Type   Inc Date   Amount
-----------------------------------------------------
Tax  Div.    GM       Stock      03/31/84   83.50
```

This is your record of interest or dividends received and is another handy report during tax season.

```
Tax Report - Portfolio: Sample  John Doe  12/31/87
-----------------------------------------------------
Symbol Type Unit Purchased  Sold  Cost Proc.G/L %GL  S/L
-----------------------------------------------------
IBM  Stock  50  04/21/84  10/12/84 5367. 6298. 930. 17 ST
```

Simply a record of sales of stock and your winnings (loses).

THE 128 MONEY TOOL

```
Transaction - Portfolio: Sample  John Doe 12/31/87
-----------------------------------------------------
Tran Type  Symbol   Date      Description    Amount
-----------------------------------------------------
Buy        GM    01/07/84  Stk: 76.5 x 50 +126= 3951.32
```

The least understood but one of the most important reports is a chronological file of everything you've entered. Can also be printed and purged once a year for convenience. If you're trying to track down a previous mistake this is where you do it. This is excellent for rebuilding files if you ever have a disk glitch. I print this update on every session just for peace of mind. There is also an onboard calculator (in a window) available. Multiple portfolios are accepted, which particularly handy for keeping IRA's separate from trading accounts. There is also a 35k buffer if you want to grab news stories off the newswire that affect your stocks.

File Utilities are available as are reconfiguration for various modem, printers, and drives. Ram expansion is not supported but disk space and speed is not a problem. The reports illustrated are already "canned" and available if you wanted to do other things you can design an almost unlimited variety of different report formats. Designing forms is complex and time cosuming much like any other spreadsheet type application.

Now let's look at "Strategist 128". This program has four basic elements: quote files (history), a starting strategy (model), an optimizing program (the real power of the program), and the monitoring status (which is the decision making result of all of the above). Monitoring can be done daily, weekly, or monthly, contrary to some reviews.

The quote files are easy. Once you key in your preference of daily, weekly, or monthly and the day of the first quote i.e. the first Friday in July of 1984 for example, the program will query by the next date and prompt you for a price. To ease the number crunching the function keys are set up as 1/8, 2/8, 3/8 etc. to conform with the convention of stock quotes in fractions. Once the quote file is completed along with dividends and any stock splits, you're ready to get started. Incidentally, Basic Term is included for getting quotes and is adequate if you don't like complicated telecom programs, it's totally menu driven and has a 50k buffer. There has been some criticism that this program can't directly download to the quote files but it would be difficult to accomplish it without limiting which online service was to be used. What's more important, however, is that by manually entering the quotes it is possible to spot errors that can occur in the wire service files or in the downloading process itself.

When you fire up the first strategy program (after doing the quote files) you'll be asked about brokerage costs i.e. commissions that you would pay your broker on purchases and sales and any fixed fees etc. These figures are crucial to the operation of the program since normally some cost is incurred in the transaction that will influence Strategists optimum strategy. For example, if trading costs are low, the program might indicate more frequent trades. All brokerage houses and mutual funds give their fees in their promotional material. There will be several other relevant questions that are self explanatory. After entering the appropriate data you'll get the next screen:

```
STRATEGY SUMMARY:  (Sample stock)
                          BUY        SELL
PERCENTAGE CONSTANTS:      10          15
PERCENTAGE COEFFICIENTS:  -50          50
PENETRATION CONSTANTS:      1           2
PENETRATION COEFFICIENTS: 100         -75
VELOCITY AVERAGE PERS:      8           5
```

THE 128 MONEY TOOL

You do not have to have an intimate knowledge of the terms! The formulae (lightly covered in manual) are no different than ones used by portfolio managers on larger computer systems. (Everybody has heard of programmed trading by now.) What we're doing here is giving us some of that same number crunching capability.

The computer needs a starting point and you can use the model numbers or, if you have a working knowledge of the formulae, you can create alternatives. Let's assume for the time being that you leave things alone. The 128 will do a fast mode calculation in less than a minute of when it would have bought and sold the stock in your quote file. It simultaneously will calculate how much money you would have made with any amount that you cared to invest in the beginning. All of the numbers are generated with the above starting parameters. (We are only doing rough calculations at this point.) To conserve space, the resultant purchase and sell transactions are not shown here, these trade results are then saved to the program for the next step.

The next step is automatic but interesting to follow on the screen since it will do about 20 minutes of solid calculation in 128 fast mode. The program will optimize and refine the basic strategy numbers by making multiple passes (in some cases, hundreds of them, with up to 400 or 500 transactions) through the quote file and devise a Current Trading Strategy. When the calculation is finished you will see a list of buy and sell transactions by date and price and probably a change in the original percentage and penetration constants and coefficients and the total profits in most cases will be higher. Using the refined numbers you'll now get a Stock Monitoring screen which looks like this:

```
MONITOR STATUS:  IN MARKET (or Out of Market)
DATE:  121986          PRICE:    40.62

HIGH:  42.61           PENETRATIONS:  0
BUY VELOCITY: .0328    SELL VELOCITY:  .0326
FREQUENCY:  7
```

The top line shows whether you're in or out of the market, the second, the current date and price, and the rest is for technicians, understanding of the numbers isn't required. Below the screen, each week (or whenever you update) will come a message (not shown) if a buy or sell action is triggered.

To test the program (I had a lot of doubts) I keyed in a few years of historical quotes that preceded times that I actually acquired stocks. I then worked forward week by week and let the program buy and sell with a final comparison of that against my results, it was like playing Sargon III at the highest level of difficulty. The results were staggering, the program would have gotten me out with skin intact during the recent market fluctuations (crash?).

The real value of Strategist is that it allows us to separate emotions from logic. You see most of us are just too darn tip prone. By analyzing the past trends and recommendations that the Strategist makes, you get insight into the strategies that are the most successful for a particular stock. Although Strategist is by no means a surefire get rich program, it can temper the emotions and enhance the decision making process. The combination of BOTH PROGRAMS (Strategist and PPM) will, if nothing else, provide the tools for both elementary market timing and very good financial record keeping.

```
        lda vicpntr
        cmp #$c1
        bcc colrloop
        rts

getbitm jsr setupdat ;y=0 or 1
;for field 0 or 1
        lda #$00
        sta update ;use update to
hold vic
        lda #$20 ;bitmap row address
        sta update+1

        ldx #25
rowloop stx row
        sty tempy
        jsr bitmloop ;get 4 scanlines
        jsr newrow
        ldy tempy
        ldx row
        dex
        bne rowloop
        rts

bitmloop lda update ;set
vicpntr
        sta vicpntr ;to start of
bitmap row
        lda update+1
        sta vicpntr+1

        jsr getscan
        jsr updplus40
        iny
        iny
        cpy #8
        bcc bitmloop
        rts

getscan ldx #40 ;one scanline
to 8563 screen
scanloop lda (vicpntr),y
        stx tempx
        jsr writemem
        ldx tempx
        jsr vptrplus8 ;next column
        dex
        bne scanloop
        rts
****************
setupdat lda update ;set
update address
        ldx #19
        jsr writereg
        dex
        lda update+1
        jsr writereg
        rts

getrow ldy #0 ;row of color
data
getcol lda (vicpntr),y
        jsr convert ;vic to 8563
equiv
        jsr writemem
        iny
        cpy #40
        bcc getcol
        rts

inc40 lda vicpntr ;start of
next
        clc ;vic color row
        adc #40
        sta vicpntr
        lda vicpntr+1
        adc #0
        sta vicpntr+1
```
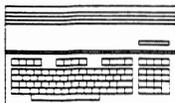
```
newrow lda vicpntr ;set
next rows address
        sta update ;for bitmloop
        lda vicpntr+1
        sta update+1
        rts

updplus40 ldx #19 ;add 40
to update regs
        jsr readreg ;result is
one scanline down
        clc
        adc #40
        bcc skphi
        jsr writereg
        ldx #18
        jsr readreg
        adc #0
skphi jsr writereg
        rts

vptrplus8 clc  ;add 8 to
vic addr
        lda vicpntr
        adc #$08
        sta vicpntr
        bcc exitadd8
        inc vicpntr+1
exitadd8 rts

convert pha
        and #$0f
        tax
        lda data,x
        asl ;mult. by 16
        asl
        asl
        asl
        sta tempx
        pla
        lsr ;divide by 16
        lsr
        lsr
        lsr
        tax
        lda data,x
        ora tempx
        rts
data hex 000f08070a04020
d0b0c09010605030et
```

THE WRITE STUFF REVIEW

by Avonelle Lovhaug

I am always amazed at the stubborness of computer users about their software. Even if people know there is a better program available, and they can afford it, they still stick with their old word processor because they are comfortable with it, like an old sock which no one will throw away, even though its match is long gone. I find myself doing the same thing, even though I have access to scores of other word processors, some with special features I could use, I still keep going back to Pocket Writer II an excellent, but not perfect program. However, as time wears on, even old dogs can learn new tricks given patience and a biscuit. Busy Bee Software's The Write Stuff 128 may have just converted me.

The Write Stuff 128 is the newly enhanced update to The Write Stuff 64, which you may have heard something about from your local user group, since one of the promotional strategies by Busy Bee Software is to allow user groups and individuals to market the program. Although the $29.95 price tag may lead you to suspect that this program is less than what you are looking for in a word processor, don't be deceived by this reasonable price. This program is more than adequate for even heavy-duty word processing needs, and offers some features which haven't been seen on most word processors, especially in the C-128 world. And the most exciting aspect of the program is the flexibility and customization available so that the software can be fine tuned to work efficiently with your system and needs.

The Write Stuff 128 comes on one doubled sided disk filled with programs, tutorials, help files, and example files, a manual, and a keyboard command summary. The programs include both a 40 and 80 column version of the program, a manual maker which will print all of the help files in a manual-type format, and a program to allow the the user to make his/her custom disk-based menus. The manual program does not print out identical contents to the paper manual provided, but rather contain additional materials.

The actual text editing facility of the Write Stuff is called BB Writer. BB Writer uses a combination of menus and keyboard commands to activate its numerous features. Although there are several things you can do with the keyboard commands which are cumbersome from the menus, nearly all of the keyboard sequences can be accomplished via the menus. It is recommended in the manual that beginners use the menus at first, and move later to the more advanced keyboard commands. For the average user, menu commands will be sufficient. However, the keyboard commands really speed up the operation of the program for quick typists and with a little practice really save you a lot of time. I commend Busy Bee for supporting both advanced and novice users.

From a text editing standpoint BB Writer is first class; matching, and in many ways surpassing, the features found on other excellent word processing packages found on the C-128 and in the MS-DOS world. Insert, delete, copy and move of course are provided, but are flexible for the needs of the situation and the preferences of the user. For instance, there are several ways you can delete text with BB Writer. The Inst/Del key can be used to delete individual characters, or Ctrl and Del will delete the remainder of a line. You can delete extra spaces with Ctrl and Space bar. Text can be cleared from above or below the cursor from the Edit menu. Or you can choose to "Eat text" also from the menu (by character, sentence, word or paragraph), which can later be restored. A unique deletion feature that I have never seen in any other word processor and I have really come to love is a special command for automatically deleting preceeding and trailing spaces. The normal variety of Search and replace options are also provided (referred to as Hunt and Replace), as well as such things as decimal tabs and automatic case change.

Disk access is available from both the menu and command structures. For example, there are several different ways to load a file into memory: by command, by menu, or by calling a directory first. If you choose to load a file from the menu, all BB Writer files are automatically called up for you, and you merely move a pointer to the appropriate filename. However, if you choose to load by using the command structure, you must enter the filename. If you wish to load from a directory, then as the directory of the disk scrolls past, the user should press the shift key, which pauses the scroll and pulls a pointer for the user to point to the file. One flaw with this method is that if you let go of the shift, the directory starts to scroll again, and the pointer will only point to those files on the screen at that moment, so anything that already scrolled by is no good. You may have to do this a few times to get the hang of it, but this is the only way the user can load a non-BB Writer file from the menus. In addition to this, BB Writer allows you to merge two files, or append one two another.

The "flexibility" theme is quite evident in the screen features which are available in BB Writer. All screen colors are definable to the user's preference, including: border colors, background colors, text colors, clock color, help menu colors, etc. The word wrap feature defaults to on, but can be toggled off. Shifted spaces can be made visible or invisible, as well as a special "edge effect". What is this amazing edge effect? Basically, everything past the last letter of text on every line is changed to a different color. The manual states this is to allow the user to see better the true number of spaces that will be printed at the end lines. Is this feature useful? well... I've been wrong before, perhaps I not seen the light. BB Writer defaults this "astonishing" feature "OFF".

Another interesting aspect of BB Writer is its screen scrolling. If the cursor is at the very bottom and I press the down arrow again, instead of moving the screen up one line, the scroll moves the screen up one sentence. The same thing works in reverse at the top of the screen with the up cursor. At first I found this fairly disconcerting, but actually it makes scrolling faster and more logical.

For those who have special formatting needs, BB Writer includes facilities for general formatting needs as well as some special requirements such as alternate pagination, auto-intendation, conditional forced pages and much more. When printing the page numbers of your documents, you can choose between Roman and Arabic numbering systems. And if you need an outline facility or autonumbering of lists BB Writer has these options as well, BB Writer also supports a straight-forward multiple column output syntax as well as a mail merge facility. BB Writer also offers file-linking for documents that extend beyond the text editing space.
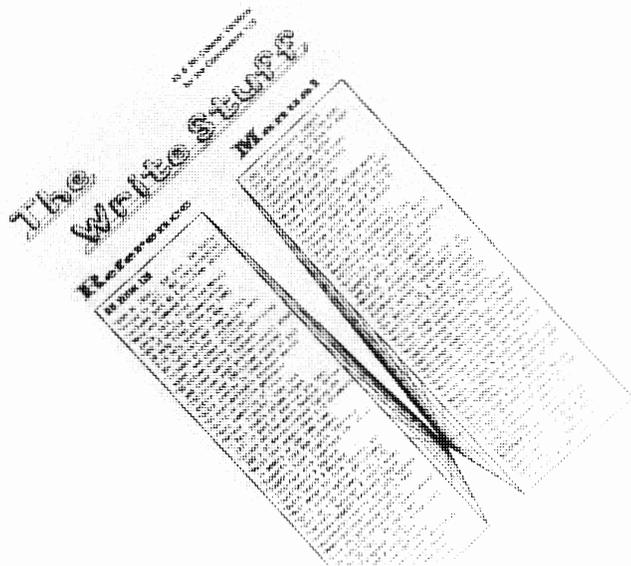
THE WRITE STUFF REVIEW

Continued from Page 9

If you prefer the Dvorak keyboard as opposed to the standard Qwerty keyboard, you can toggle between the two. If you have a Ram Expansion Unit (REU), then BB Writer can be customized to autoboot the program in a way to use the REU as an extra drive. BB Writer allows the user to vary printer defaults so that the program will work with a variety of printers and interfaces, and gives several suggestions for doing the fine tuning necessary to make the program work with the user's particular configuration. The program even works with TC-128's Okidata Laserline 6 laser printer, in fact, the manual for BB Writer was printed with this laser printer.

BB Writer also has several keyboard macros which have been defined to make typing commands faster and easier. However, you can add your own defaults, or change existing ones. The help menus can be customized and adjusted so that they are more useful to your individual needs. For example, if you find you are always forgetting a particular command, you can change the help menus so that you can find this command more easily. Or, if you need help menus for something unrelated to word processing, you again can adjust the help menus for the appropriate information.

If you like the autoexpander feature in Paperclip III, then you'll appreciate this feature in BB Writer, referred to as "Macrotyping". For those unfamiliar with this feature, the principle is simple: typing would be faster and easier if we utilize a kind of typing shorthand to type common words more quickly. For instance, BB Writer uses the colon separated by either two spaces or by a space and a return mark for the word "the". Since the word "the" is a very common word, and by typing a ":" instead of "the", you cut your typing by 67%, the theory is that you can improve your speed quite a bit. Of course, this involves considerable practice on the part of the user, but after some effort I found that I did feel I was typing faster. The other problem one runs into is that after some time typing in this way, I found it difficult to switch to another word processor. However, the possibilities are almost endless. BB Writer provides several predefined macros for the user, but the user is free to add as many as he/she wishes. However, normal text memory space is decreased as more macros are added, so the user should not overindulge.

Of course, all of these features would be enough to justify recommending this word processor for at least a look, but there is even more. The program features a built in calculator for simple calculations. Although the calculator can be used to insert a total into the text, it cannot insert the entire calculation, only the totals. A file view feature has been included, so that you can examine a file to see if you wish to load or append it before you perform the command, and it doesn't affect existing text in memory. A hyphenator feature displays the longest word in your text, and allows you to position a soft hyphen within the word.

Do you appreciate the ability of Pocket Writer II to divide text memory into two separate areas, so that you can have 2 documents in memory at once. If so, you'll be interested in BB Writer, which can divide this space into between 2 and 10 text areas. But this is only half of why I thought this was so exciting. If you are working with a long document, the split screen feature (for the 80 column version only) can be very useful by allowing you to look at two areas of text at the same time. So you can be examining two different documents on the screen at the same time. Impressive, huh?

And adding to this already lengthy list, let me just list a few more of the exciting features this word processor provides: file encryption, an alarm clock feature, autoboot of a predefined file, ASCII toggle, and key click toggle to allow the user to hear when the computer registers a key strike. Also included is the ability to switch between character sets (for 40 column version only), strip return

marks off of a file, the ability to load and save to and from the 16K reserve buffer, and create your own routine which can be accessed from BB Writer. (In fact, a memory map is even provided for those hackers who are interested.)

Another feature which impressed me was the file translator or converter. If the user attempts to load a non-BB Writer file, this feature automatically pops up, and requests you to choose from 14 different word processing programs, as well as a generic text file converter. While most word processors only give you their format, and maybe a converter to sequential files, this software made it easy to switch over. In addition, they put the converter where it belongs, not as some add-on program which you have to run outside of the main word processor, but right there when you need it, when you want to load your program. I have to admit however, that I wish they had warned me in the manual that my screen would blank out for several seconds, as I began to panic when the drive light went out and my screen remained dark (if this was in the manual, I apologize, but I can't find it anywhere). The conversions worked fine with no problems. However, one small glitch arises in that occasionally the converter will not pull up even if it is not a BB Writer file. The reason for this seems to be that BB Writer recognizes its own files by name them with a hyphen as the first character. I have a disk which contains 5 non-BB Writer files with the hyphen as the first character in the name, and when I attempted to load them, the program assumed it was looking at a BB Writer file and loaded without file conversion. Of course, this is a minor problem which can be resolved by simply renaming the file. However, the option to convert a file which you know to be non-compatible would have been preferable. The only other small complaint I have is there doesn't seem to be any way to convert them back, but then again, ASCII conversion is available, and other word processors have yet to include the same type of thing, so perhaps I am being a little picky. The tutorial file included on the disk regarding file translation suggests using the batch search and replace feature to create a custom file translator, something which had not occurred to me previously. However, for the average user, I'd say this is an unlikely option.

I'd have to say I only have a few minor complaints about BB Writer. The first is the biggest: no spell checker to date. R. Eric Lee is working on one, and I suspect that we will see one eventually, but for now text can only be spell check externally. Although I suppose it is a lot to ask, I hope we see another autochecker as is available on PaperClip III. Another problem was mentioned previously: the problem with file names. Perhaps BB Writer should have given its text files a header which the program could recognize as only its own, but instead it chose to use file name's only. I suppose this made things easier, but if you ever name a non-BB Writer with a hyphen as the first character, it must be renamed before using it with BB Writer.

I didn't have any trouble getting BB Writer to send text to our Star NX-1000 printer, but on the other hand, we rarely do have problems, as this particular printer is very versatile. I was disappointed that there aren't any printer drivers included on the disk that the user can load and use immediately. Especially for the user who has an unusual printer, or one who is unfamiliar with printer codes and how to send them, etc. I believe that there are a lot of C-128 owners out there (myself included) who are not real excited about doing a detailed analysis of their printer manuals. On the other hand, this does mean that BB Writer is an extremely flexible program to print from. It allows the user to create print macros to send control codes to the printer. Your printer settings can be saved to disk so that changes do not have to constantly be retyped. There are several suggestions included in the manual and on disk to make printing with BB Writer go smoothly.
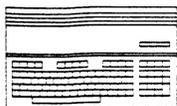
THE WRITE STUFF REVIEW

For the most part, the manual was easy to use. I found difficulty with the way it was laid out, however, and I occasionally had trouble finding things I was looking for. In addition, in at least one instance, the index listed the wrong page number. I don't believe this is a typical occurrence, however. Also, since the program makes use heavily of help and tutorial files on the disk, it cannot be rated only on the basis of the manual. In many ways, The Write Stuff provides more help and examples than many word processors currently on the market for the C-128, and does a much better job of it. Busy Bee Software included a hints and tips file to aid the user with some ideas and advice for user the program to its fullest, which I thought was a nice touch. On the other hand, I haven't yet decided yet what I thought of the file called: Unfeatures. This file is an explanation of why certain features were not included. Eric Lee picks on WYSIWYG word processors, which of course turned me off, as my favorite word processor is very good at "What You See Is What You Get". On the other hand, I agree with Eric that table of contents or index generators are not extremely useful, and can't be accomplished very well yet by computers anyway. He also explains why there isn't a line counter included so that the user knows which line he/her is typing on. And I am happy to report that he promises to work on including integrated text and graphics in future updates, as wells as a spell checker, thesaurus, or perhaps even a grammar checker.

Before I conclude, I feel obligated to tell you that in addition to making available this program in both 40 and 80 columns, Busy Bee Software has also made a version which runs with Brown Boxes, Inc.'s Quick Brown Box. This version will automatically bring up BB Writer in 5 seconds, and can automatically save the file in RAM, so that if power is ever interrupted, your entire document can be retrieved. It seems to be one of the best combinations of two pieces of software and hardware to date. And (believe it or not) there is also a version of the program called BBTalker which works in conjunction with S.A.M. (Software Automatic Mouth) to create a talking word processor. Busy Bee Software suggests that children may find this version useful, and I'm inclined to concur. My children love when the computer talks to them. However, this version is available in C-64 mode only.

I found Busy Bee Software's The Write Stuff/BB Writer to be another C-128 software great. I am more than a little amazed that we are still getting new word processors even after such good word processors that are already available for the C-128. Even more exciting is that this word processor pulls off the Commodore credo: lots of power at an affordable price. While its lack of a spell checker is somewhat limiting, it contains several other features which make it a worthwhile buy. If you are looking for a new word processor, or need some of the features I outlined above, take a serious look at this product.

Q-DISK REVIEWED (QBB)

Q-Disk version 2.0 is a CP/M software program that allows CP/M users to use the Quick Brown Box battery backed ram cartridge with the C-128. With this driver, the QBB can be assigned a drive letter of B through D. The Quick Brown Box, sold by Brown Boxes, Inc, comes fully documented with software drivers for 'native' 64 and 128 mode. But these useful utilities, however, do not work in CP/M mode. Herne Data Systems Ltd has solved the problem by writing this CP/M driver utility, which installs the ram cartridge to act as a mini-hard drive.

The Cartridge: The hardware and native software utilities are excellent, and have been reviewed by Twin Cities 128 and several other magazines, so I won't re-do it, but I will give the following summary and my own comments. Mr. Brown Pulliman, of Brown Boxes, Inc. has designed and manufactured a series of small cartridges that contain battery backed RAM for use with the C-64 and C-128. The cartridges come in three ram sizes; 16k, 32k, and 64k. Each size has a reset button and a selector switch for C-64 or C-128 mode. Any program properly loaded into the cartridge will still be there, unharmed, during cold boots, resets, power loss, or after shutting the power off, saving valuable time on re-loads. A program can theoretically last seven to ten years, even unplugged from the computer! The cartridge is shipped with several CBM mode 'Manager' drivers while a utility disk is offered for a nominal fee. QBB uses a different command address from the 3 Commodore REU devices eliminating compatibility problems when using the REU and the QBB together, but to do this one must purchase an expansion port extender board. Physically speaking the cartridge does need an adhesive backed 'foot' under the reset button to save the game port connector from the stress of pushing down on the cartridge buttons. I borrowed my Partner Cartridge 'foot', which is the exact size needed. A foot pad will be considered for future shippings. The only thing needed now, was a CP/M driver.

Herne Data Systems, Ltd working with the Brown Box people, has written and is marketing Q-Disk, the CP/M driver. The package that I received contained the disk and a well written (and typeset) booklet. Installing the cartridge in CP/M mode is done in two steps. The first is initialization and only has to be done once, unless the user wants to make future changes. This is comparable to formatting a disk in CP/M mode, so be sure you back-up whatever files are already in the QBB! After booting CP/M, just insert QDisk.COM in any drive and type QD I/ < cartridge size >. The three options are: 'L' for the 32k box, or the lower half of the 64k box; 'H' for the upper half of the 64k box; and 'F' for the entire 64k box. Not specifying a cartridge size will default to the 'L' option. Once you have the cartridge 'formatted' and only part of it partitioned, what happens to the other 32k? The 'L' and 'H' options allow you to use the other 32k (in a 64k cartridge) for native C-64 or C-128 mode storage. Now try that with your REU! Re-installing with the 'I' option is just like reformating a disk, all existing data is lost. The second part for installation is activating the QDisk driver, and is just as easy. The driver must now be initialized whenever CP/M mode is booted by one of three methods: typing the QD command at a CP/M prompt, using the submit command, or directly modifying the CCP. If you use a profile.sub to set drive paths, date, or whatever, simply add a short QD command to the profile.sub with VDE or Wordstar. If you do not use a profile.sub, then the CCP.COM can be modified to automatically install the driver. QDisk will even modify it for you. By typing 'QD P' QDisk will offer nine different options for selecting which drive letter (or letters) the cartridge will be assigned, and the size of the partition or cartridge. With a copy of the CP/M boot disk and QDisk in the same drive (and three different chances to abort) the CCP modification is easy and quick. If you ever desire to use a profile.sub, you will have to type 'submit profile.sub' because this CCP

modification deactivates the auto start feature. I prefer to keep the CCP.COM 'clean' and activate the driver through the profile.sub, but either way works well.

Usage: Once the QDisk is properly installed, using the cartridge is exactly the same as any other CP/M drive, except that it never has to be rebooted. Access time is comparable to the REU, almost instantly. Just pip your most used files into the qbb, and if your submit file has a drive search path, include your new device letter for the cartridge to allow automatic loading from any logged drive. I have used the cartridge to store various utility files, and finally settled down to 7 files, about 58k total. My most-used file is B-29.COM, a sweep like menu driven disk copier, file viewer and 'jack of all trades' with its brother file CKCRC.CRC, and like FORMAT.COM, is now a permanent member of the QBB club. You don't have fill it with utilities. Wordstar, and other programs will easily use it as a data drive, however, most of these programs are themselves too large to fit in the limited 64k size. Several CP/M utilities could be used with the QBB cartridge. The native mode utility disk contains a short program called check sum. This is for verifying the entire box contents by adding the byte values of the current box contents and displaying them. Comparing this value to the original tells you if the ram memory has been corrupted. While this program does not work in CP/M mode, there are several CP/M com files that do the same, and more. The one I use is in GEnie Information Service, page 685, library 34 (C-128 CP/M) file #6414 called CKCRC11.ARK. This program will verify individual files on any drive showing check, ccitt, patch, number of records, and even creates a file with these values for later comparison. Another utility is unerase.com (GEnie file #5956) for 'un-OOOPSING those just erased files.

Compatibility: QDisk seemed to be compatible in almost every usage imagined, even CONIX, which heavily modifies the CCP.COM. Since QDisk resides just above a copy of the CCP, a larger CCP would interfere with the QDisk operation. In these cases, use the supplied QD5.COM, which locates the QDisk drivers at 5000h. This is done by simply renaming the QD files, and installing it as before. Z3plus users can use the standard program. One minor problem that the manual points out is changing the disk label of the QBB with the set command. The manual explains that 'this is only because the QBB already has a disk label which is also used as a flag for initialization purposes...

Comments: Despite my torture test, the QBB/QDisk combination is a happy marriage, and I could not find any flaws. Installation and usage was simple and well documented. I think that consideration should be given to include the QDisk driver disk with the QBB cartridge. While some people feel that a 64k ram cartridge is too small, ask yourself how many 64k letters or utilities you have. A 128k version cartridge has two major price considerations, according to Barb Mintz, Programming Director of Brown Boxes. The first is the recent ram price increase, and the second would be re-engineering costs and the possible change of the cartridge's physical size. Both could make the cartridge approach the price of a disk drive. Whether you are a full time or part time CP/M user, you will find the versatility of QDisk a definite savior!
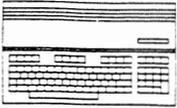
STARTING WITH CP/M

by Edith Chasen

Editor's Note: If you are a regular reader of Twin Cities 128 you know that for the most part Twin Cities 128 is not a beginning computerist's publication. It is not a secret that we tend to cater to the intermediate and advanced C-128 owner who appreciates discussion of some of the more abstract C-128 programming and application concepts. However, as the popularity of Twin Cities 128 continues to grow I am becoming increasingly aware that many of our newer readers are less computer adept and would like to see us publish more material that will help them learn and grow as well. Therefore, in fairness to everyone who has supported this endeavor with their hard earned dollars, I am going to try to make it a point to include some beginner's material in each issue of Twin Cities 128 from now on. I am confident all of you veterans out there won't mind a page or two covering things you probably have known for years; especially since you know we are equally committed to bringing you the kind of advanced, "cutting-edge" material that you have enjoyed receiving from Twin Cities 128 over the years. I think all of us, C-128 old-timers and rookies alike, will benefit in this way as we remain committed to bringing all of you first-rate C-128 information.

There's a whole other operating system that came with your 128 computer! It's called "CP/M", and it's on that "other" disk, that you put aside when you first unpacked your 128. I also did this, and when I later tried to list its directory, all I got was a series of characters that made no sense. So, back into its box went the disk, for some other time. One day, I finally decided to find out what that "other" disk was all about. To my surprise, it wasn't as hard as I expected it to be. I started by reading the limited documentation in the CP/M section of the "128 System Guide", which takes a bit of patience. The commands are a bit different than BASIC commands, but I was at last able to get the system booted up and actually copy my original disk.

And that is the hardest part - just getting past that first hurdle to learn how to use that "other" disk. It is a 2-sided flippy, one side containing the main program and the other side the utilities that you'll need to get going. The 128's version of CP/M is called CP/M plus 3.0, which stands for Control Program for Microcomputers. It is a more enhanced version than the one which used to be sold on cartridge for the C64. It comes as a "flippy" to accommodate those who have a 1541 drive. It's true that the 1571 drive does a lot more, such as reading and writing other formats (like Kaypro, Osborne and MS-DOS), and does it all faster, but the 1541 is more than adequate to get you started. And by the way, even though CP/M uses pure ASCII and the 1571 is read/write compatible with these other formats, that doesn't mean you can run programs meant for other computers on your 128. However, it is handy if you have access to another CP/M compatible computer, and wish to use your data disks on your 128. CP/M can also be run on the 1581, although this support has to be sent for separately as it is not packaged with your computer.

It's a good idea to copy the original disk over to your own work disks, so that in your experimentation, no damage will occur to the original. No, it's not copy-protected! In order to do this, you'll want to know a little ahead of time about CP/M, so you can make your copies with confidence. The first thing you have to do is get CP/M up and running, so put the disk with the first program (system) side up into your drive, and turn on your 128. It's auto-booting! You can sit there and watch it load itself. It will automatically figure out if you are using the 40 or 80-column screen. If you ordinarily use the Mach 128 cartridge, you can leave it; it is compatible. (If you like, once you have become comfortable using CP/M, you can use some of the utilities to change your default colors and

re-define some of the keys, such as the function keys. You can even set up a file that will also be loaded upon booting, which can run whatever utilities you want, set up your printer, and perform other useful configurations for you.) The prompt will then come up, which looks like "A >" with a flashing cursor.

Now you are ready to start. Leave the system disk in the drive, and type "format". It will automatically detect which drive you are using, and then present you with a short menu of compatible formats. After you make your choice, it will prompt you to insert a fresh disk into the drive, formatting will proceed, and you will eventually be presented with the A > prompt again. Now you are ready to copy the original disk - at the A > prompt, insert your original disk back into the drive, and type "pip e: = a:*.*". (It doesn't matter if you use capitals or lower-case letters.) PIP stands for Peripheral Interchange Program, and you can think of it as a copy program. It also has a few other options, such as re-directing output to your printer and combining files. In CP/M, you don't have to load the program first to run/read it; just type its name. You don't even have to type out the full filename - it is titled PIP.COM on your disk, but the .COM doesn't have to be typed. When you just typed PIP in the previous command, you told the 128 to load and run the PIP.COM file. The rest of the syntax tells the 128 what to do next. The E stands for a virtual, non-physical drive - if you only have one drive, the program will copy to this disk by telling you to switch disks at certain intervals. The A stands for drive #8, where the system looks for the file to be copied. B would be drive #9, so if you have 2 drives, you could replace the E with a B. The * is like pattern-matching in BASIC, and simply tells the PIP file to copy everything on the disk. Actually, CP/M is quite user-friendly, with prompts on the screen for you at strategic times. When the copy is done, the familiar A > prompt will appear again, and you are ready to copy the utilities side of the disk. Do it the same way. If at a future time you should want to work only with your second drive as the default, at the prompt type "b:". This will change the A > prompt to a B >. For now, stay with A >.

Now that you've accomplished this, let's see what is on your disk. At the A > prompt, type "dir". This will give you a directory listing of the files on the disk in drive A. Anytime you don't specify a drive letter while typing a command after the A > prompt, the system defaults to drive A. If you want the directory of your second drive, type "dir b:". The listing looks a little different than a BASIC one - it's in 5 columns, separated by colons, and the file names don't have the familiar PGM or SEQ filetypes, but don't worry, we'll get to that! If you are using a 40-column screen, you'll have to press the CONTROL key simultaneously with the 128's top row left or right arrow keys to scroll horizontally and see all 5 columns. Let's now get a work disk ready for some other CP/M files. Format another fresh disk, and let's make it auto-booting; there are 2 files on your system disk that accomplish this, called CPM + .SYS and CCP.COM. CPM + is your version of CP/M and CCP is the command processor. Put your copy of the system disk back into drive A, and the newly formatted one in drive B, and type "pip b: = a:cpm + .sys". After that file is copied, at the next prompt type "pip b: = a:ccp.com". If you have only one drive, remember to substitute an E for the B in the above commands, and the system will prompt you when to change disks. Now your auto-booting disk is ready for new programs to be added to it. I recommend placing these 2 files only on disks you want to auto-boot CP/M, since you can save a lot of disk space by keeping only your own files on your work disks. Many people also put SAVE.COM onto their work disks, to have the ability to conveniently save program files from memory at a later time. I keep one work disk just with the utilities on it that I use all the time. There are many good utilities available besides the ones supplied on your original disk, which you can use to accomplish things like erasing files, looking at

STARTING WITH CP/M

directories, etc. CP/M is a very old operating system, and there are tons of public domain and commercial software available for it. In fact, it goes all the way back to the days when teletypes were more common than monitor screens. If you belong to a telecommunications network such as Quantumlink, you'll find lots of public domain files you can download. There are also numerous user groups around, such as FOG (First Osborne Group), which have many interesting and useful programs available for a small fee. There are many productivity and utility programs easily obtained, but fewer games. If you belong to a network such as Quantumlink, when you download files, you'll have to transfer them to CP/M format when you're offline. The networks have CBM to CP/M transfer programs, which are not difficult to use. The files on a network are also often libraried (gathered together), and squeezed or crunched (to save you download time). Using these files requires learning to use the networks' programs to de-library and so on, but these programs are no more difficult to use than their BASIC counterparts.

Let's take a look at some of the filetypes you'll be seeing on your CP/M disks. The filenames consist of 2 parts, the prefix (name) and then a tail (type), separated by a period; for example, "MYFILE.SYS". This is a system file that is named MYFILE. Some other common tails are .COM for a machine language program, .HLP for a help file, and .TXT and .DOC for a text file. The name is assigned by you when you put the files on your disk, and you can pick whatever name and tail is most descriptive. Your system disk contains extensive help documentation that you can read by typing HELP at any prompt. It is handy if you have no books on CP/M to read aside from the 128 Users Guide. If you find you'd like to explore CP/M further, you can send for the Digital Research Inc offer that comes in your 128 Guide. For $19.95 you get 2 more CP/M disks with additional utilities and programming files, and an extensive book on CP/M. The CP/M you have is actually a combined effort of both DRI and CBM. DRI develops CP/M, and distributes it to the computer manufacturers. CBM then modifies a part of it to work on their machines. The disk that comes with your 128 gets you up and running and contains enough to keep you busy for a long time. Then, if you wish to go further, you'll need to purchase the additional support from DRI.

One of the most noticeable characteristics of CP/M is that it is a disk-intensive operating system. That is, there are some commands that are transient, residing on your disk instead of being loaded into memory. They sit there, just waiting for you to use them. PIP is one of these commands. In order to fully use it, the file called PIP.COM must be present on your disk, or the computer will just echo back to your screen PIP?. When you type one of these transient commands at the prompt, the system looks for the corresponding supporting file on the disk, and if it doesn't find it, it asks you what you are talking about! As a

result, there is a lot of disk-accessing going on during CP/M use. If you have a 1581 drive or a 1750 REU, you'll really appreciate the speed and convenience they offer. The 1750 can be used with CP/M as a virtual drive M. There are other commands that are resident built-in ones, loaded into memory, like USER. These don't need to be present on the disk in your drive for you to use them. USER is an interesting command - it lets you divide your disk directory into 16 different areas. You can put files on a certain subject in one user area, on another subject in a different area, and so on. It thus gives you the option to not have huge lists of files when you do a directory listing on the screen, and to organize your files on your disk more clearly. The default A > has a user number of 0, but if you type another, such as "user 5", the prompt will change to 5A >. Some of the built-in commands, like DIR, also have transient extensions, so their usefulness is expanded. For example, if you have DIR.COM on your disk, you can type "dir[full]" and get a listing showing not only the files on your disk, but also all their attributes. This means everything about them, such as how much disk space they take up, if they are read/write files, how many directory entries have been used out of the maximum available, etc. You can type "dir b:[full]" with DIR.COM on your disk in drive A, and it will give you the full directory of the disk in B. Alternately, you could have DIR.COM in drive B, and type "b:dir b:[full]". Should you type DIR[FULL] without having DIR.COM on any disk in any drive, the system will tell you that DIR.COM is required. If you don't want all this info, but only to find out how much disk space is left on drive A, then type "show". Just be sure SHOW.COM is on your disk, as this is a transient command. You can, of course, type "show b:" for space left on drive B with SHOW.COM in drive A, or type "b:show b:" with SHOW.COM in drive B.

Here's something a little more complex you might like to try - what if the file you want to copy, say SHOW.COM, is in drive A, and PIP.COM is in drive B? Then try typing this syntax "b:pip b: = a:show.com". Long, but it works! The system looks in drive B for PIP.COM, then copies SHOW.COM from A to B. Confused yet?! Don't worry - you'll get the hang of it!

Did you do something strange? You've gone through all this and now see a weird name on your directory! Let's get rid of it - type "erase b:filename". This syntax assumes you have the filename you want to get rid of in drive B. If it is on the disk in drive A instead, just type "erase filename". ERASE is one of the commands like DIR - it is built-in, with a transient extension. If you try to do something with it that requires ERASE.COM to be on your disk, such as just typing "erase", the system will tell you. (In a case like this, the system needs ERASE.COM so it can ask you which file to erase.) Here's something you'll like - you don't need to validate your disks after erasing files, as ERASE automatically frees the disk space for you.

CP/M is a straight-forward operating system to learn, and easy to follow through on. It has been neglected in recent years due to the high-tech elaborate environments coming out on the market, but I believe it is enjoying a resurgence as many people find out how convenient and transportable it is between computers. I think you'll enjoy exploring this "other" disk that came with your 128!
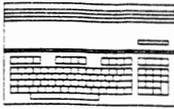
BASIC 8 BOOK REVIEW

by Frank Hudson

There must be a fear in computer book publishing of the word "intermediate" in a title. The computer section of any bookstore or library contains many books with "advanced" or "beginners" in their titles, but few brave enough to claim they aim in between. Many of these beginners books are not written for the person wondering which end of the floppy disk goes in first, just as the advanced texts are probably redundant at times to the lucky few who can unfold and refold the memory maps of the C-128 at will. It is in this spirit I'm willing to forgive Dan Hill and Hands On Software for the title of The Beginners Guide to BASIC 8. This small 45 page paperbound book and companion disk is instead a useful supplement to the BASIC 8 owner's manual. It is predominantly made up of short sample programs, clearly explained, illustrating the BASIC 8 commands. It assumes the reader already has a firm grounding in BASIC on the Commodore 128 and foreknowledge of the principles of good programming.

Dan Hill's writing is straightforward and clear, covering a lot of ground in the book's few pages. No space is expended on humor, pictures, or side-trips to the history of computing. Nor does the author attempt to convince you that programing in BASIC 8 is the only way you'll ever want to use your 128. Hill's written-to-the-bone approach will be refreshing to anyone put-off by cutsey programming books, and the need for illustrations is well met with the companion disk showing you on your computer screen what BASIC 8's 80 column graphics commands can do. On the other hand, the book's plain style and occasional typographic lapses will do little to draw the casual reader into the information within.

The demonstration programs are all under a page in length, and show every BASIC 8 command in action except for @HCOPY and @PIXEL. Each example is listed in the book along with a page or two explaining what is being done. No advanced BASIC 8 tricks or full-fledged application programs are presented. Although these programs are in function trivial, the abilities of BASIC 8 to access the 128's highest resolution graphic's screens being taught are not.

While the BASIC 8 manual is extensive and well written, I felt it lacked well explained examples. For myself, I can read command dictionaries and look at parameter options until my eyes are rattling against their stops, but I won't learn a language unless I start messing around with programs that I can understand and then modify and borrow ideas from. Listing and studying BASIC Paint or the Walrus Workbench included in the BASIC 8 package from Walrus could also allow a newcomer to examine BASIC 8 code in action, but for the daunting length of the printout produced from an 117 block sized application like BASIC Paint! The Beginners Guide to BASIC 8 also corrects a couple of errors it finds in the BASIC 8 manual as well as listing a patch to a bug in the @ANGLE command found in early versions of BASIC 8. The author has not chosen to present the examples in a standard tutorial manner. The more complex commands requiring setting up of reserved areas of RAM as buffers and memory address flags are discussed ahead of some of BASIC 8's simplest drawing commands. I didn't find this off-putting. Since all discussion is kept concise, it is easy to skip ahead to the areas one feels ready to tackle and a helpful index to the page containing the most complete discussion of each BASIC 8 command is included.

In an unusual move, Dan Hill lists a phone number to contact him for further help understanding the book's programs. The double sided 1541 format companion disk also includes a nice BASIC 8 auto-running demo. Older 128 owners with 16K VDC RAM will be able to run all the examples included.

At it's price The Beginners Guide to BASIC 8 is worth consideration for the intermediate BASIC programmer who is interested in exploring the 128's 80 column graphics modes through BASIC 8. I found it a useful extension of the BASIC 8 manual's command dictionary.

Beginner's Guide to BASIC 8 by Dan Hill
$19.95 including examples disk
Requires BASIC 8
Software Support International, 2700 NE Anderson Road, Vancouver, WA 98661 Suite D13, 206-695-1393
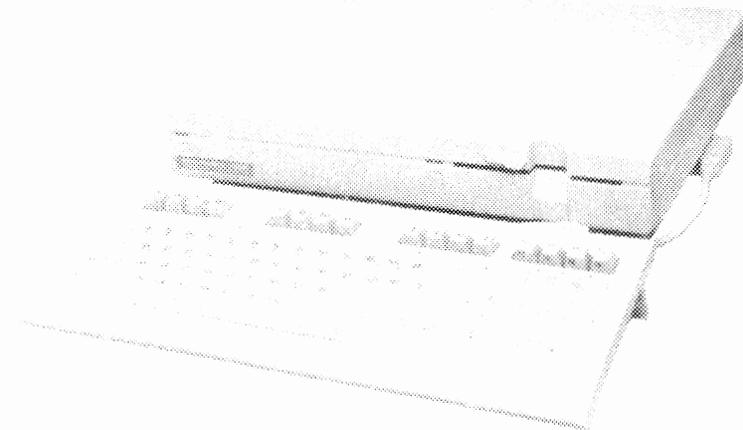
SSI 64K VDC BOARD REVIEW

by Bruce Jaeger

We all know the desirability of having 64K of video RAM in our 128's, but the only ways to get it have been to:

1. Buy a new C-128D.

2. Pay a repair shop a good chunk of moola to replace the existing VDC RAM chips.

3. Replace the RAM chips yourself, risking ruining your 128 by puddling solder all over everything, burning up the main circuit board, and zapping every chip in sight.

Normally, of course, I'd choose Option #3, both because I'm cheap, and because I actually enjoy tedious electronic soldering, up to a point. But recently I received Software Support International's 64K Video RAM Upgrade kit, which offers a solderless way of upgrading your RAM.

The kit consists of a small, cleanly-produced circuit board containing the 64K RAM chips and a socket for your 8563 chip. On the bottom of the circuit board are pins for inserting the whole assembly into the Commodore 128's 8563 socket. So installing 64K RAM in your machine involves only opening the cover, removing the metal RFI shield and the cover to the video circuitry, pulling the 8563 from its socket and plugging it into the RAM Upgrade circuit board, then (carefully--it's tricky!) plugging the circuit board back into the original 8563 socket. Easy! And you can just as easily remove the upgrade at any time.

The single sheet of instructions are adequate, but just barely. They're printed with a dot-matrix printer in condensed (135 column) mode, each line the full width of a page, and the whole works was then reproduced on an out-of-adjustment photocopier. In this age of dime-a-time laser printers, this sort of thing is really makes a company look bad. Perhaps that's why Software Support International didn't print their name on the instructions! Nowadays, (in business) dot matrix printers are for program listings and mailing labels.

All that aside, I installed the entire kit in under 60 seconds. Of course, my C-128 hasn't had its case screwed together for years, the RFI shield is somewhere on a shelf downstairs, and I'm the fastest ol' chip puller in the contiguous 48 states. Still, even if you're slow and cautious (as you should be) you should be up and running with 64K VDC in less than half an hour.

I ran a couple of demos that required 64K of VDC RAM, and everything worked flawlessly. The slightly cheesy instructions aside, this is an excellent product, and at $44.95 makes upgrading your video RAM safe and easy.

Solderless Video RAM upgrade to 64K
Software Support International, 2700 NE Anderson Road,
Vancouver, WA 98661 Suite D13, 206-695-1393
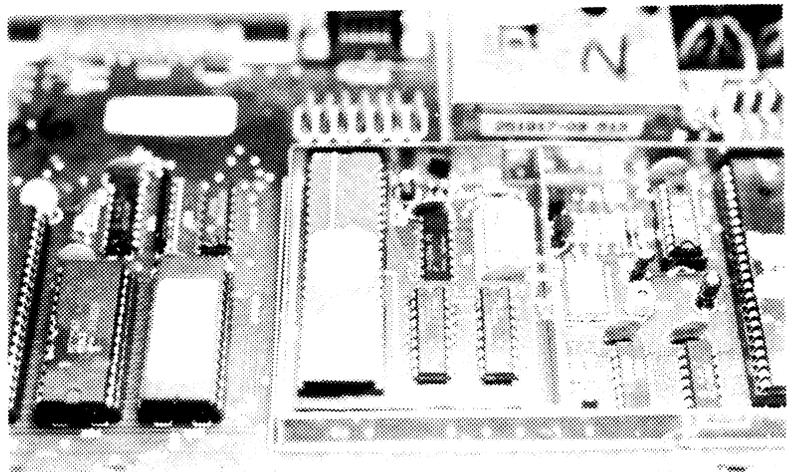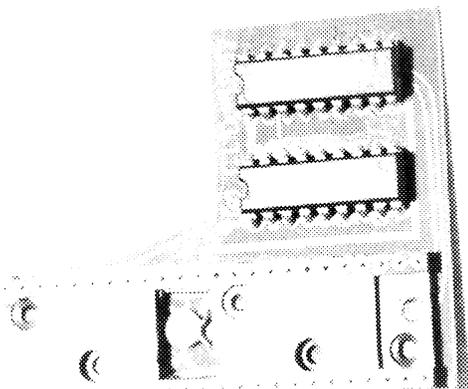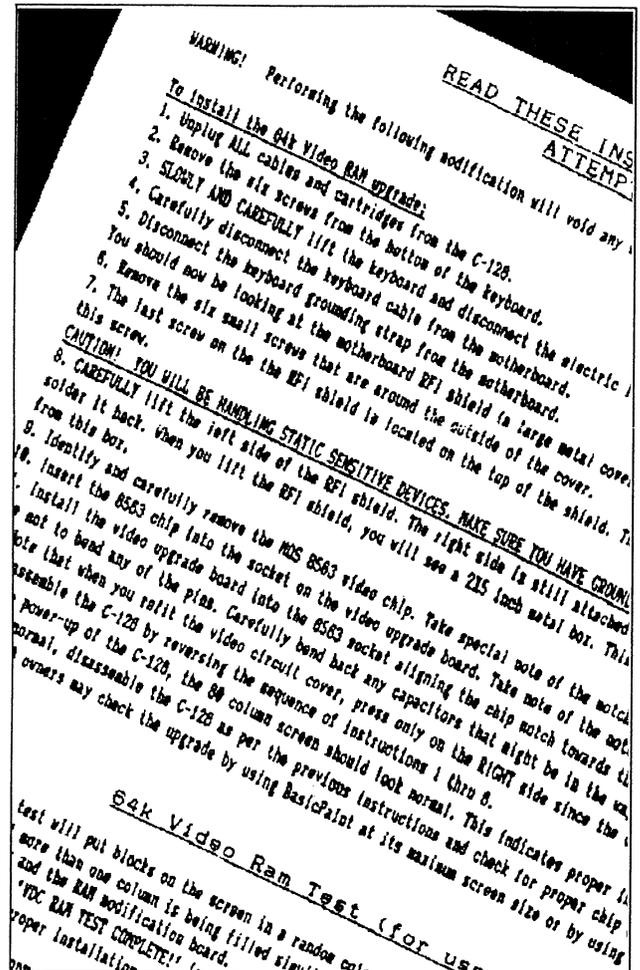
MEGA HIRES COLOR

by Rich Kane

Every day, it seems, we learn more and more about the capabilities of the 8563 RGB display chip. And the more we learn, the more endless seem the possibilities. With the following short Basic program and accompanying 233 byte machine language memory transfer routine, you will be able to display SIX graphic 1 (Doodle) hi-res screens on the RGB screen, in color, at once! That's 640 by 600 pixels.

I'll get to the machine language later. First I want to discuss the changes necessary to the 8563 registers to accomplish this "impossible" feat. Fred Bowen's Mega-HiRes article in issue #21 outlines the basics. The horizontal total, displayed, and sync numbers stay the same as in the 640 pixel wide displays mentioned there, $7D, $50, and $66 respectively. Changes come whenever the character total is involved.

The number in CharTot (R9) was 6 for the monochrome displays. This means that the character size is 7 scanlines vertically. In color, CharTot needs to be 7 (for eight scanlines) to display graphic1 8x8 pixel color 'cards'. The Vertical Total (R4) is the number of character rows between sync pulses. At 7 scanlines per character, the value $5c (92) used in those 600 line displays gives 644 scanlines total. At 8 scanlines, we need 644/8 or (roughly) 80 characters. VertDisp (R6) follows the same logic, and is also set to $50. VertSync (R7) is tweaked to $77 for best display position.

Next comes calculating the memory position of the second field, the bitmap of scanlines 1,3,5,7, etc., using the formula:

$$((VertDisp / 2) * (CharTot + 1) +1) * HorzDisp$$
$$R6R9R1$$

With a CharTot of 7, the address of the 2nd field is 25680.

It is also necessary to come up with a starting address for the attributes. Some calculations help here. If the second bitmap field starts at 25680, and the field needs 24000 (80 * 300 - one field, remember?) bytes, we should be able to start it after 49680 without interference. I chose 50000, or $C350. Then what of the second field's attributes? Well, there are 80 rows total vertical, and 80 character blocks per row, and 6400 is the offset to the second field's attributes.

Vertical Total Adjust (R5) also has to be 'tweaked' to come up with the best display, and 7 works best.

I wanted to write this as a stand-alone program, without the need for Basic 8 or any other support systems. So it is necessary to do the setup work 'manually'. In this regard, the single most important register is R28, bit 4. It tells the 8563 which RAM type is present, 4416 (16K) when off, or 4164 (64K) when set, and changes the way memory is configured to the Video Controller. The proper value of R28 for the 128D or upgraded 128 is $3F to address all 64K, but it is initialized to $1F.

The attribute address is set to $C350, as calculated above. But the display start address is adjusted for the odd fact that the actual on-screen bitmap display start in color mode is not visible on my 1902A. It is off by one character row. By setting the display start back 320 ($140) bytes, the first byte displayed is the bitmap start. But what is $0000-$140? It is 65536-320 ($FEC0), since $0000 = $FFFF + 1.

Attributes are turned on by setting bit 7 of R25. The monochrome colors are set to black on black, to allow a quick way to 'blank' the screen during transfers from the VIC screen. (If you'd rather watch it work, place a 'rem'

before the statement 'sys wr,135,25' in line 540). Then the proper values are sent to the horizontal and vertical total, displayed, sync, adjust, position, CharTotVert, interlace, and as a precaution, address increment per row.

One advantage to using Basic 8 would have been its fast clear routines, which use the Block Copy capabilities of the 8563. The best thing to do would have been to create a similar routine to clear the screen. Instead, I chose to clear the graphic1 screen and use my existing transfer routine to clear the 6 positions one by one. It is much slower, but would allow the Basic programmer to, say, write a routine to put six blank boxes of different colors before transferring graphic screens, for instance.

Lines 550 and 610 calculate the memory address for a given position (po), for attributes and bitmap, respectively. If po is even, 40*(po and1) is 0, and the transfer starts at the left edge of the screen. If po is odd, (po and1) = 1, and the transfer starts at the middle of the screen. 'int(po/2)' yields 0, 1, or 2. For attributes, there are 25 character rows of 80 characters, for an offset of 2000. For the bitmap, there are 100 scanlines per picture, 80 bytes (HD) per scanline, for an offset of 100*hd*int(po/2).

Finally, we get to the machine language. As originally written, graphic 1 files were read in from disk directly to the 8563 memory using Basic. Each picture file took 3 1/2 minutes to load, a total of 20 minutes for six! Since this program is meant to excite C-128 owners, and not put them to sleep, I set out to speed things up via assembly language. The machine language routines and Basic are really co-dependent. The routine SETUPDAT, called by both the GETCOLR and GETBITM routines, requires the necessary address be stored at UPDATE ($FC-$FD). Again, this is for convenience in interrupting the process, or altering addresses before calling the transfer routines. In addition, the GETBITM routine is called with the Y register set to either 0 or 1, depending on the scanlines involved.

The CONVERT routine takes into account the fact that the VIC and 8563 methods of interpreting their color memories are different. Color values are as follows for the two chips:

VIC	Color	8563	
0	black	0	
1	white	15	
2	red	8	
3	cyan	7	
4	purple	10	
5	green	4	
6	blue	2	
7	yellow	13	
8	orange	11	
9	brown	12	
10	light red	9	
11	dark grey	1	
12	medium grey	6	(dark cyan)
13	light green	5	(light cyan)
14	light blue	3	
15	light grey	14	

When attributes are enabled in bitmap mode, the foreground/background nibbles are the opposite of the VIC nibbles. That is, foreground color is the high nibble in the VIC, and the low nibble in the 8563 arrangement (unless R24 bit 6 (RVS) is set, but then the bitmap data is displayed reversed, so 0 means on, 1 off). CONVERT takes a VIC color byte, gets the proper nibble, then uses it as an index to the correct 8563 color in DATA. It then OR's the found values to create the 8563 color byte.

MEGA HIRES COLOR

DD2MEGAHIRES.BAS is the basic program that runs the show. MAKEML.DISP/LACE is a basic program that will create the binary file for the assembly language transfer routine. The source code is also provided for your reference. Using the program is quite simple, you will be asked whether you want to clear the 80 column screen or not, and then asked if you want to load or transfer a doodle screen. Respond with a "t" and you will be asked which area you want to transfer the contents of the forty column bitmap area will be to (0-5) and the transfer will follow. If you respond by typing an "l" you will be asked for the name of doodle (graphic 1 type bitmap) you wish to load. If you respond to with a filename of "$" the program will display a directory of all files with the prefix "DD" which is the doodle convention. Responding to the load/transfer prompt with anything other than "l" or "t" will toggle you between spilt-screen and full screen bitmap mode allowing you to view the bottom of the 40 column bitmap. To exit the program press the run/stop key.

LISTING 1
DD2MEGAHIRES.BAS

```
110 REM C-128 VDC 64K RAM INTERLACE DOODLE VIEWER
120 REM BY RICK KANE <C> 1988
150 FAST:TRAP 670:GRAPHIC 1
160 SYSDEC("CDDA"),,25:RREG A:IF (A AND 128)=0 THEN GRAPHIC
    5:PRINT"MENU ON 40 COLUMN SCREEN":GRAPHIC 0:ELSE PRINT
    CHR$(7)
180 ML$="ML.DISP/LACE"
190 BLOAD (ML$),U(PEEK(186))
200 GC=DEC("1300"):GB=DEC("1321"):REM GETCOLOR, GETBITMAP
210 WR=DEC("CDCC"):CW=49474
220 DA=DEC("FEC0"):DH=INT(DA/256):DL=DA-DH*256:REM DISP ADD
230 AA=DEC("C350"):AH=INT(AA/256):AL=AA-AH*256:REM ATTR ADD
250 FAST:RESTORE 750
260 READ X,S,SA,HT,HD,HS,VT,VA,VD,VS,CT
270 SYSDEC("E179") :REM INIT VDC
280 SYS WR,DEC("3F"),28:              REM 64K RAM CHIPS
290 SYS WR,DH,12:SYS WR,DL,13
300 SYS WR,AH,20:SYS WR,AL,21:SYS WR,199,25
310 SYSWR,0,26:REM MONOCHROME COLORS TO BLACK ON BLACK
320 GOSUB 770
330 SLOW :GRAPHIC 0,1:PRINT CHR$(14);"          DD2MEGAHIRES"
340 PRINT"        64K DISPLAY RAM"
350 PRINT"INTERLACE MODE DOODLE VIEWER ":PRINT
360 PRINT"        640 X 600 COLOR"
370 PRINT"CLEAR BITMAP SCREENS? Y/N":GETKEY K$:IF K$="Y"
    THEN GRAPHIC 1:SCNCLR:FOR PO= 0 TO 5:GOSUB 540:NEXT
390 GOTO 410
400 GETKEY K$
410 GRAPHIC 2:WINDOW 0,20,39,24,1
420 IF INSTR("LT",K$)>0 THEN 440
430 PRINT"LOAD OR TRANSFER?":GETKEY K$
440 K=INSTR("LT",K$):IF K>0 THEN ON K GOSUB 470,520
450 GRAPHIC 1:GOTO 400
460 REM ** DOODLE LOADER **
470 INPUT"DOODLE FILE TO LOAD";F$:IF F$="$" THEN WINDOW
    0,0,39,19,1:GRAPHIC 0:DIRECTORY"DD*":WINDOW
    0,20,39,24,1:GOTO 470:ELSEIF F$="" THEN RETURN
480 GRAPHIC 1:BLOAD(F$),P(DEC("1C00")),U(PEEK(186))
490 RETURN
510 REM ** TRANSFER GRAPHIC TO 80 COLUMN **
520 PRINT"POSITION: 0  1":PRINT"              2  3":PRINT"
    4  5":INPUT PO:IF PO<0 OR PO>5 THEN 520
540 FAST:SYS WR,135,25:REM BLANK SCREEN
550 FOR J= 0 TO 1:MEM=AA+(SA*J)+ 40*(PO AND1)+
    2000*INT(PO/2)
560 MH=INT(MEM/256):ML=MEM-(MH*256)
570 POKE DEC("FC"),ML:POKE DEC("FD"),MH
580 SYS GC          :REM PUT COLOR DATA
590 NEXT
600 FORJ=0 TO 1:MEM=(S*J)+ 40*(PO AND1)+ 100*HD*INT(PO/2)
610 MH=INT(MEM/256):ML=MEM-(MH*256)
620 POKE DEC("FC"),ML:POKE DEC("FD"),MH
630 SYS GB,,,J     :REM PUT BITMAP DATA ON SCREEN
640 NEXT :SYS WR,199,25:SLOW
    RETURN
```

```
670 SLOW:GRAPHIC 0:SYS CW
680 IF ER=4 THEN PRINTDS$:SLEEP 2:RESUME NEXT
690 INPUT"RESET 80 COLUMN TEXT SCREEN";Y$
700 IF Y$="Y" THEN SYS DEC("E179"):SYS DEC("FF62"):GRAPHIC
    5,1:GRAPHIC 0:END
710 STOP:RESUME
740 REM    X    S    SA    HT HD  HS   VT VA VD VS CT
750 DATA 640,25680,6400,125,80,102,80,07,80,77, 7
770 SYS WR,HT,0 :REM H TOT
780 SYS WR,HD,1 :REM H DISPLAYED
790 SYS WR,HS,2 :REM H SYNC POSN
800 SYS WR,VT,4 :REM V TOTAL
810 SYS WR,VA,5 :REM V TOTAL ADJ
820 SYS WR,VD,6 :REM V DISPLAYED
830 SYS WR,VS,7 :REM V SYNC POSN
840 SYS WR,CT,9 :REM CHAR TOT VERT
850 SYS WR,03,8 :REM INTERLACE
860 SYS WR,00,27:REM ADR INC / ROW
870 RETURN
```

LISTING 2
MAKEML.DISP/LACE

```
10 FOR I=0 TO 14
20 READ A$:B=0
30 FOR J=1 TO LEN(A$) STEP 3
40 B=B+1
50 D$=MID$(A$,J,2)
60 POKE 4863+(I*16)+B,DEC(D$):T=T+DEC(D$)
70 NEXT J
80 NEXT I
90 IF T<>28599 THEN PRINT"ERROR - CHECK YOUR TYPING!":END
100 PRINT"PRESS ANY KEY TO SAVE BINARY FILE":GETKEY Z$
110 BSAVE"ML.DISP/LACE",B0,P4864 TO P5098
1300 DATA "20 67 13 A9 00 85 FA A9 1C 85 FB 20 75 13 20 85"
1310 DATA "13 20 9C 13 A5 FB C9 1F 90 F1 A5 FA C9 C1 90 EB"
1320 DATA "60 20 67 13 A9 00 85 FC A9 20 85 FD A2 19 86 FE"
1330 DATA "84 9C 20 40 13 20 93 13 A4 9C A6 FE CA D0 EF 60"
1340 DATA "A5 FC 85 FA A5 FD 85 FB 20 55 13 20 9C 13 C8 C8"
1350 DATA "C0 08 90 EC 60 A2 28 B1 FA 86 9B 20 CA CD A6 9B"
1360 DATA "20 B4 13 CA D0 F1 60 A5 FC A2 13 20 CC CD CA A5"
1370 DATA "FD 20 CC CD 60 A0 00 B1 FA 20 C0 13 20 CA CD C8"
1380 DATA "C0 28 90 F3 60 A5 FA 18 69 28 85 FA A5 FB 69 00"
1390 DATA "85 FB 60 A5 FA 85 FC A5 FB 85 FD 60 A2 13 20 DA"
1400 DATA "CD 18 69 28 90 0A 20 CC CD A2 12 20 DA CD 69 00"
1410 DATA "20 CC CD 60 18 A5 FA 69 08 85 FA 90 02 E6 FB 60"
1420 DATA "48 29 0F AA BD D9 13 0A 0A 0A 0A 85 9B 68 4A 4A"
1430 DATA "4A 4A AA BD D9 13 05 9B 60 00 0F 08 07 0A 04 02"
1440 DATA "0D 0B 0C 09 01 06 05 03 0E 00 00"
```

```
** doodle to interlace 8563 subroutine
 org $1300
vicpntr = $fa
update = $fc
tempx = $9b
tempy = $9c
row = $fe
writemem = $cdca
writereg = $cdcc
readreg = $cdda

getcolr jsr setupdat ;start of attributes set by basic

  lda #$00 ;start of vic color memory
  sta vicpntr
  lda #$1c
  sta vicpntr+1

colrloop jsr getrow
  jsr inc40
  jsr updplus40
  lda vicpntr+1
  cmp #$1f ;if vicpntr >$1fc1
  bcc colrloop ;last row is done
```
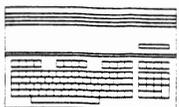
by Miklos Garamszeghy

INSIDE THE 1581 (VECTORS)

One of the nice features of the 1581 is its ability to use sub directories (disk partitions) to divide the large 800k disk space into smaller more manageable chunks. However, this feature does not well work with all commercial software (PaperClip, PocketWriter, etc.) because of the annoying habit of such software to log-in the drive with an 'i0' command before reading or writing. On the 1581, the 'i0' command is not only superfluous for disk log-ins, but will also re-set the directory partition back to the normal or 'root' directory area, thus negating any previously made partition selection. Fortunately, there is a way to de-activate the 'i0' command without interfering with other operations of the 1581, thus giving full partition support for virtually all software. The technique outlined below can be extended to other operating system functions such as VALIDATE, SCRATCH and NEW.

The operating system of the 1581 is quite unique amongst Commodore disk drives: the major functions are accessed through indirect RAM vectors. This means that you can trap the vectors and replace the code in the drive ROMs with your own code. The ample RAM and buffer space of the 1581 even makes such custom programming quite possible.

On the 1581, operating system calls are made via a two step jump. The various routines are normally accessed by JSRing or JMPing to a table of addresses beginning at $FF00 of the disk drive's ROM. Each entry in the table consists of an indirect JMP (xxxx) instruction, where xxxx is an address of a location in the drive's RAM that contains the real address for the routine to be executed. This address, or vector, normally points back to a ROM routine. However, because the ultimate execution address is stored in RAM, it can be easily changed to point to new or custom code.

Table 1 is a list of some of the more important of the 1581's vectored operating system calls and the normal memory locations associated with each. The purpose of each of the functions is described in detail beginning on page 108 of the 1581 user's manual along with the remainder of the operating system calls. To disable any of these commands, it is only necessary to point the vector to a simple RTS instruction somewhere in the drive's ROM. One such convenient location is $807b. Remember that one, de-activates any system function and can be very useful.

Back to our original problem. The vector for the 'i0' command is at $198. To de-activate the command, a simple memory write is all that is required. After opening the command channel on the required disk drive as logical file 15 (eg. OPEN 15,8,15 for a device 8 drive), type in:

```
PRINT#15,"M-W";CHR$(152);CHR$(1);CHR$(2);CHR$(123);CHR$(128)
```

This sequence of bytes does a memory write to the RAM in the disk drive (similar to a POKE in the computer) which changes the address vector at $198 to point to the magical RTS instruction mentioned above. Now when your software issues an 'i0' command to the drive, it is just ignored and your previously selected partition remains intact. *Note: The techniques described here will only work with the 1581 drive and will cause other drives to crash or trash disks.*

To restore the operation of the 'i0' command, you need only issue the drive reset command:

```
PRINT#15,"UI"
```

This automatically resets all RAM vectors to their default values (unless of course, you have intercepted the 'ui' vector, in which case it will do nothing.) Note that this memory write method must be applied prior to starting up your other software because it is very difficult, if not impossible to send the required CHR$ values to the disk drive from within a commercial program, even one containing a sophisticated DOS wedge. It will also be reset by a general system reset, such as pressing the reset button.

To change DOS partitions from within an application program, the application must have a DOS wedge, or similar means, capable of sending any user specified command string to the disk drive. The command to select a disk partition is:

```
/0:[partition_name]
```

where [partition_name] is the name of the disk partition that you wish to select. It will appear in the directory with a file type of CBM. Note that to access it as a sub-directory partition, the partition must first have been formatted as a DOS partition when it was initially created. To return to the normal or 'root' partition, the command is: /0 with no partition name specified.

As with all computer programming, there is more than one solution to the problem. This next one uses a DOS & utility file loader to perform the same task in a slightly more elegant fashion. (The DOS & file is a special type of USR file which contains a machine language program to be executed inside of the disk drive.) To activate this program, all you need to do is send:

```
&0:I0-OFF
```

over the disk command channel to the 1581 drive. This is very easy to do with the DOS wedges available in most commercial word processing programs etc. (For example, with PocketWriter 128, to get to the DOS wedge, press the C= logo key then the c key. You can then type in any disk command and send it to the drive. Other programs have similar capabilities.) To restore the i0 command, send the ui command string over the command channel as outlined above.

Listing 1 is a BASIC loader which creates the USR file I0-OFF. It works with all Commodore computers capable of using the 1581 drive. Remember to set line 150 to the device number of your 1581 drive. This device number is only used to create the initial file and is not used as part of the file itself. Obviously, the technique outlined above can be extended to any of the vectored commands. For example, by changing the vector at $01AA you can disable scratch and $01AC can be used to disable the new command.

TABLE 1: *1581 System Vectors*

System Function Name	Main Entry Address	RAM Vector at address	Points to code at
JIDLE	$FF00	$0190	$B0F0
JIRQ	$FF03	$0192	$DAFD
JNMI	$FF06	$0194	$AFCA
JVERDIR	$FF09	$0196	$B262
JINTDRV	$FF0C	$0198	$8EC5
JPART	$FF0F	$019A	$B781
JMEM	$FF12	$019C	$892F
JBLOCK	$FF15	$019E	$8A5D
JUSER	$FF18	$01A0	$898F
JRECORD	$FF1B	$01A2	$A1A1
JUTLODR	$FF1E	$01A4	$A956
JDSKCPY	$FF21	$01A6	$876E
JRENAME	$FF24	$01A8	$88C5
JSCRTCH	$FF27	$01AA	$8688
JNEW	$FF2A	$01AC	$B348

LISTING 1:
```
110 REM    TURN OFF 1581 IO COMMAND BY MIKLOS GARAMSZEGHY
150 DV=8          : REM 1581 DEVICE NUMBER
160 OPEN 2,DV,2,"I0-OFF,U,W"
170 FOR I=1 TO 15:READ X:PRINT#2,CHR$(X);:NEXT:CLOSE2
230 DATA 0, 4:REM EXECUTE DOS '&' FILE AT $0400 IN DRIVE RAM
240 DATA 11 : REM PROGRAM IS 11 BYTES LONG
250 DATA 169, 123    : REM    LDA #$7B
260 DATA 141, 152, 1 : REM    STA $0198    ; RESET IO VECTOR
270 DATA 169, 128    : REM    LDA #$80     ; TO POINT TO A
280 DATA 141, 153, 1 : REM    STA $0199    ; RTS COMMAND
290 DATA 96          : REM    RTS
300 DATA 14          : REM    CHECKSUM
```
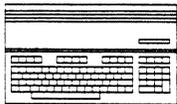
AMIGA TO BASIC 8 GRAPHICS

by Loren Lovhaug

Hey you! Yeah you! Yes, you, the C-128 owner over there with your toungue hanging out of your mouth looking at that Amiga graphics demo. Yes, I caught you lusting over that graphics demo; but don't worry its okay. The Amiga's graphics are impressive, and I admire them too. But I'll tell you something, did you know that you can now port those hot looking displays over to your C-128? In this month's BASIC 8 column I'll show you how!

Yes, its true, you can bring those beautiful Amiga screens over to the C-128's eight column display, well almost. The hitch is that, although the C-128 can now match, and even surpass the bitmap resolution of the Amiga (See Twin Cities 128 issues #20 and #21 as well as Rick Kane's article in this issue) it can't touch the Amiga's color capacity or color resolution (few microcomputers can). You see the Amiga has dot addressable color, which means that each pixel can actually be a unique color. Unfortunately the best color resolution we can do on our C-128's is a unique foreground and background color per 8 x 2 pixel "color cell". These color abilities are what make's Amiga graphics look so sharp, even though their actual bitmap resolutions are no higher than what we are presently able to so with C-128's who possess 64K of video RAM. You see its the color that adds the the perception of depth and higher resolution, and not the actual bitmap data itself.

However, even without being able to match the Amiga's color display capabilities we can take advantage of the immense amount of graphics data being generated and derived in the Amiga community with our C-128s! This especially pertains to digitized material. Most of the digitized graphics we find on the C-64 and C-128, such as those created with ComputerEyes, are very blocky and crude. This is due to the fact that the digitizers developed for the C-64 work only on 320 x 200 screens, and often are not very sophisticated. To make matters worse, most people who convert C-64 digitized graphics to the 128's 80 column screen do it using utilites that simply double the horizontal size of each pixel, essentially halving our beautiful 640 x 200 screen back to 320 x 200. However, many of the digitized graphics found on the Amiga are digitized in 640 x 200 or 640 x 400 resolutions and therefore look great on the C-128 640 x 200 and 640 x 400 pixel screens.

Because as I noted earlier, the C-128 is not capable of near the color resolution of the Amiga, we have a slight dilemma when it comes to transfering those pretty pictures over to the 128. We can approach this dilemma in two ways: 1) We can drop color entirely, and work with the bitmap only as a monochrome display (after all bitmaps are bitmaps on any computer), unfortunately due to the size of the typical Amiga graphic file, and for reasons discussed below, this is best done a pre-conversion step on the Amiga or 2) We can attempt to simulate color by using complex dithering algorithms which create dot patterns to simulate color via the creation of an artificial "grey scale". Although the latter approach may be preferable in some respects there are several reasons why I chose the former.

The main reason for not going with the dithering approach is the complexity of the problem. Essentially what needs to happen is you have to write a program which can "simulate" colors by evaluating intensity and assigning dot patterns to each intensity. Not only is this program immensely difficult to write, but even in assembly language it would be quite a task for either the Amiga or the C-128 computationally. The result is likely a program that would take several minutes, if not hours to convert a single image. Another reason I avoided the dithering approach was that I did not want to spend months working on such a huge program project. I just wanted a quick and dirty, but effective, technique for bringing Amiga images to BASIC 8. So dropping the color uncomplicates the matter... almost.

The next obstacle in my path was actually getting the images converted to BASIC 8. One might think that this would be a trivial excercise since virtually all Amiga images are stored in a common file format called IFF. Unfortunately, there is fly in the ointment. This being that nearly all of these standardized IFF images are actually stored in a mathematically compressed format to save storage space and to speed loading. This compression is analogous to the ARCing or librarying files for telecommunications purposes. So my next problem was trying to figure out how I could "de-encode" these compressed images so that I could transfer them to BASIC 8. Fortunately the problem was solved for me, in advance.

Every Amiga comes with a disk called the "Extras" disk which contains the Amigabasic programming language and several helpful utilites. One of these utilitites is an Amigabasic program called "loadilbm-saveacbm" written by Carolyn Scheppner of Commodore. This program actually does the file decompression for you (apparently Amigabasic is not too fond of file compression either so this is an important utility for Amigabasic programmers or so I am told) and then saves an uncompressed IFF image to disk. Since this program was written in BASIC, my first idea, was to convert this program over to the 128 so that we could simply log onto any Amiga BBS or national telecommunications network and download compressed pictures, and then uncompress them and convert them to BASIC 8 completely on the 128.

Unfortunately, the "loadilbm-saveacbm" program is a complex monster which makes several calls directly to the Amiga's operating system which I neither understand or even know whether I could duplicate effectively. If there is anyone out there reading this who has the technical expertise to port this conversion utility over to the 128, and would be willing to do it for us, it would be much appreciated. However, in lieu of being able to port the program over to the 128 myself, I opted for writing my conversion utility so that it would convert uncompressed IFF files (called acbm files in Amigaland) to BASIC 8. This means that unfortunately you need to have a friend with an Amiga uncompress the files for you before you use my program to convert the uncompressed file to BASIC 8. Thankfully many of the people most interested in pushing C-128 graphics development such as myself, Lou Wallace, and Fred Bowen all have access to Amigas so we can do the decompression and then convert the files without having to impose on other people. Hopefully there are some kind Amiga owners out there who will acommodate you.

Okay, now that we have covered the theory and the problems here is an outline of what needs to be done to bring an Amiga bitmap over to the C-128 and BASIC 8.

1. Convert the multi-color Amiga image to monochrome (what they call 1 bitplane in Amigaland). Since I don't have a 128 program that can decode the compressed Amiga file format, we have to have this done for us on the Amiga, unless the file you are transfering to the 128 is already a monochrome image (a lot of desktop publish clipart, and conversions from the Macintosh and the Atari ST to the Amiga are monochrome already). Most graphically inclined Amiga-types (they all are) have programs that can do this, two of which I know of are Butcher and Deluxe Photolab. I should mention that there is another method for converting the images to monochrome and that is through a public domain Amiga program called Macview converts which Amiga images to the Macintosh. This program does some of the dithering/grey scaling techniques I discussed earlier, although the results are sometimes pretty crude.

2. Convert your monochrome graphics image to an uncompressed image using "loadilbm-saveacbm". As I said earlier this Amigabasic program is located on the Amiga "Extras" disk; in a sub-directory called "Basicdemos".
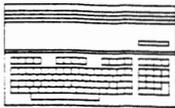
AMIGA TO BASIC 8 GRAPHICS

Continued from page 20

3. Transfer the image file from the Amiga to the C-128. The most common method is via modem. If your Amiga pal has the C-64 emulator version 2, and you and he have the right disk drives, I suppose you could use that method as well. If you use the modem, be sure to save the file to a C-128 disk before you exit your term program .

4. Run the following program to convert the uncompressed Amiga image on your C-128 disk to BASIC 8. Of course since this program is written in BASIC 8 you will need either the BASIC 8 editor (commericial) or the BASIC 8 RTL (public domain) run this program. Once you get the image over to the 128 there is no reason why you can't use a BASIC 8 compatible paint package to "re-colorize" the image.

```
100 FAST
110 DC$="S"+CHR$(27)
120 TRAP 500
130 BANK 15
140 WR=52684:WM=52682
150 DATA 16,56,124,254,56,56,56,56
160 SYS WR,49,18:SYS WR,224,19:FOR I=0 TO 7:READ D(I):SYS
    WM,D(I):NEXT
170 SYS WR,240,19:FOR I=7 TO 0 STEP -1:SYS WM,D(I):NEXT
180 @BUFFER,0,32078,32000
190 GRAPHIC 5,1
200 PRINT "AMIGA ACBM TO BASIC 8 FILE CONVERSION UTILITY
    V1.1"
210 PRINT "BY: LOREN LOVHAUG - OCTOBER 1988"
220 WINDOW 0,3,79,24,0
230 U=PEEK(186):POKE 842,48+U:POKE 843,157:POKE 208,2
240 INPUT"ENTER THE SOURCE UNIT FOR THE ACBM FILE ";SU
250 PRINT:POKE 842,48+SU:POKE 843,157:POKE 208,2
260 INPUT"ENTER THE DESTINATION UNIT FOR THE BASIC 8 FILE
    ";DU
270 Z$="ACBM.":U=SU:GOSUB 520:GOSUB 530
280 INPUT"ENTER THE NAME OF THE ACBM SOURCE FILE TO CONVERT
    ";AF$
290 Z$="PICT.":U=DU:GOSUB 520:GOSUB 530
300 INPUT"ENTER THE NAME OF THE BASIC 8 DESTINATION FILE
    ";B8$
310 Z$="200":GOSUB 530
320 INPUT"ENTER THE SIZE OF THE BASIC 8 FILE IN SCANLINES (1
    - 400)";SL
330 BLOAD (AF$),B0,P31995 ON U(SU)
340 BANK 0:FOR I= 0 TO 4:POKE 32078+I,0:NEXT I
350 D=SL:GOSUB 540:POKE 32083,80:POKE 32084,145:POKE
    32085,1:BANK 15
360 RESTORE 510
370 FOR I= 0 TO 3:READ D:POKE 5340+I,D:NEXT I
380 D=(SL*80)+32078:GOSUB 540:POKE 5344,LB:POKE 5345,HB:POKE
    5346,0:POKE 5347,0
390 PRINT:PRINT "PRESS ANY KEY TO DISPLAY THE IMAGE.
    ONCE THE IMAGE HAS BEEN DISPLAYED, PRESS:"
400 PRINT CHR$(95);" TO SCROLL THE IMAGE DOWN OR ^ TO SCROLL
    THE IMAGE UP.  PRESS 'S' TO SAVE, OR "
410 PRINT "ESC TO EXIT.":GETKEY ZZ$
420 WINDOW 0,0,79,24,1:@WALRUS,1:@SCREEN,0:@CLEAR,0,0,15
430 @SCRDEF,0,0,0,640,SL,0,0
440 @FETCH,0,0,0,0
450 GETKEY ZZ$:Z=INSTR(DC$,ZZ$):ON Z GOTO 470,480,490,500
460 GOTO 450
470 IF SL>200 THEN @SCROLL,0,1,0:GOTO 450:ELSE GOTO 450
480 IF SL>200 THEN @SCROLL,4,1,0:GOTO 450:ELSE GOTO 450
490 @STORE,0,DU,1,B8$
500 @TEXT:PRINT DS$:END
510 DATA 4,0,78,125
520 PRINT:DIRECTORY (Z$+"*") ON U(U):PRINT:RETURN
530 FOR I= 1 TO LEN(Z$):POKE 841+I,ASC(MID$(Z$,I,1)):NEXT
    I:POKE 208,LEN(Z$):RETURN
540 HB=INT(D/256):LB=D-(HB*256):RETURN
```
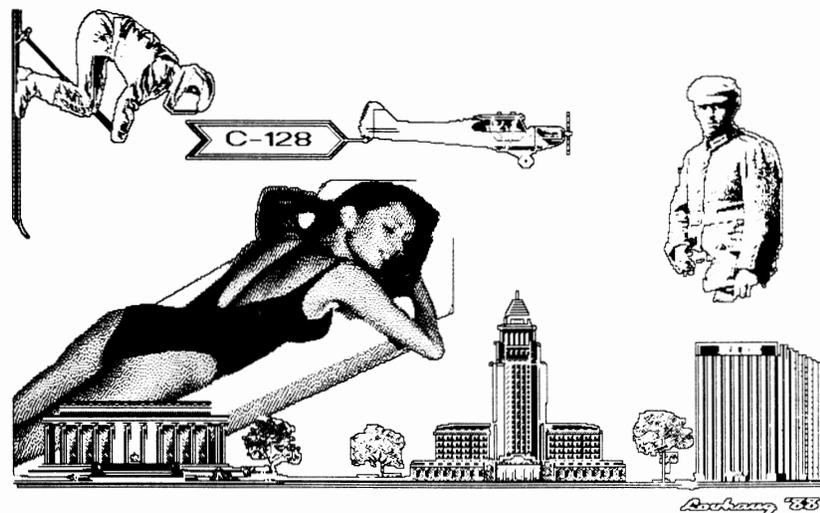
And that is all there is to it. One note, if your C-128 only has 16K of video RAM you should change the @walrus,1 in line 420 to @walrus,0. This will also mean that the largest image you will be able to convert will be 640 x 200 pixels.

The original version of this program simply replaced the IFF header on the uncompressed Amiga bitmap with a BASIC 8 header and then saved the file, therby making it an uncompressed BASIC 8 file. Although this worked just fine, the result was some quite unecessarily large BASIC 8 files. So I re-wrote the program into its current form.

The current version does some pretty nifty internal BASIC 8 tricks. First, I BLOAD the uncompressed Amiga bitmap file, into an area that I have defined as a buffer. Then I poke in a fake brush structure header and a fake entry into the structure table which begins at decimal 5340. BASIC 8 has now been convinced that the Amiga uncompressed bitmap is an uncompressed brush structure loaded into my bank 0 buffer. From then I just allow the user to save that brush structure as a BASIC 8 compressed file, which greatly reduces the amound to space it takes up as well as its load time. To get a better handle on how this all works I suggest you snoopers out there study the brush structure docs in the back of the BASIC 8 manual as well poke around with the monitor in the areas around decimal +5340 after defining a few BASIC 8 structures.

The image below is one that I greated through Amiga graphics conversion and doctoring in BASIC 8. You see, that young lady on the Amiga was simply not suitable for print. But with careful pixel work in BASIC 8, I drew in the swim suit that allowed her to become a symbol of C-128 graphics without compromising our high moral standards. I am particularly proud of this graphic. I will be uploading it to Q-link and GEnie so you can look at it on screen as well.

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THE BACK PAGE

by Loren Lovhaug

All the news and advice we save till last....

The used Commodore hardware market is very interesting to watch these days, especially with the Christmas holidays quickly approaching it is likely that a few weeks before and a few weeks after the two holiday weekends you will see some very good bargins as people scramble for holiday funds and clear out their computer rooms to make room for new stuff. Two C-128 items however are not good prospects for bargain hunters: the 1750 RAM Expansion unit and the Commodore 1571 disk drive. Over the summer as the 1750 REU shortage hit its peak, used 1750 prices skyrocketed nearly 35%. At the peak it was not uncommon to see people asking $175 for a used 1750, a full $15 over the common retail 1750 price just eight months ago. And now it appears yet another Commodore eight bit product will be in short supply as we approach the new year. Many dealers are already reporting a shortage of Commodore 1571 disk drives. Although Commodore strongly denies all rumors that they have ceased making the product it is clear that over the past two quarters Commodore has reduced the quantity of 1571s they are building. Apparently the reasoning behind this move, lies in the success of both the C-128D with its built-in drive and the continued strong sales of the 1581. Also this may be a reflection of the fact that Commodore may not be getting the price they want for the 5.25" disk drive mechanisms, given the fact that with the Amiga's and the 1581 they are likely ordering a lot fewer units than in years past.

Smart C-128 shoppers also would do well these days to make some phone calls to dealers and mail order outfits from around the country looking for C-128 bargains. With the Christmas season approaching many distributors have been hedging their bet against the season by reducing their inventories and generating some cash. Many great C-128 titles such as Bobsterm Pro 128, Vizastar 128, Superscript 128, and Multiplan 128 have recently been seen at substantially lower prices on dealer shelves and in magazine ads.

All indications are that the Commodore 128D is still selling quite well. Sears has reported that it their number one selling computer and several Commodore reps and even Commodore top gun Max Toy have from have reportedly been flabbergasted by the 128D sales numbers. Explanation? The 128D still makes a lot of sense for the C-64 owner who is ready to upgrade...and there are so darn many 64 owners out there that this trend could continue for a long time.

Till next time gang...