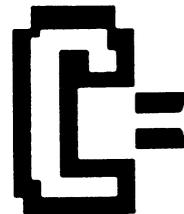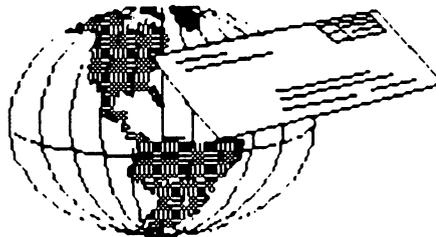# COMMODORE MAILINK

**NEWSLETTER OF —
MEETING 64/128 USERS
THROUGH THE MAIL**

Jean Nance, President

MARCH, 1994

MEETING NEWS

by Jean Nance

WELCOME to new members Myron Daniels, Peter Firla, Tom Griffith, Larry Howard, Roger Hoyer, Jane Jones, and Robert Reeves. Their names and bios are in the March Membership list. Make them feel welcome in the group.

MARCH MEMBERSHIP LIST. The March membership list and "Information" section is included with this issue of the MaiLink. Keep this where you can find it until September. Address corrections or changes are often listed in the MaiLink. The best thing to do is to make these corrections in your membership list when they appear. You can't predict when you might need to write to another member. I suggest that you keep a file folder with the latest membership list and recent MaiLinks. If you need to write to any member, look first in the latest membership list. If the person is not there, look for his/her name among new members in the MaiLinks that have come out since that list. Please don't count on me, or other officers, to give you the names and addresses of members. We are always willing to be helpful, but you can save us a lot of work by consulting your file of group material first.

Thanks to BRIAN VAUGHN who maintains our membership list, a job that represents a great deal of work, month in and month out throughout the year.

INFORMATION SECTION. With the March membership list is an information section. Read it and get acquainted with the kind of information that is there. I gather and maintain the listings, with the help of Don Droege. Before asking questions about what is available through our group, check to be sure your question isn't answered in the Information section.

WELCOME COMMITTEE. SHIRLEY PATTERSON and JOAN MELTON have volunteered to form a committee to write cards or letters of welcome to each new member and find out what they need and what the group can do for them. I still encourage others to write to new members; but Shirley and Joan will make it certain that each person gets at least one friendly contact.

JIM HEHL was recently in a serious airplane accident. He suffered a broken leg and other injuries. Because of medical expenses, he was forced to give up his cabin in Wasilla and has moved to Willow, also in Alaska. His new address follows in case you want to send him a card or drop him a line: James Hehl, 8C-89 Box 328, Willow, AK 99688.

ADDRESS CHANGES:

Bea Luhmann, 900 N. Broad St. #2063, Brooksville, FL 34601-2332

Michael Todd, 16820 N. 1st Dr., Phoenix, AZ 85023-3616

COMMODORE MAILINK

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Any and all opinions expressed in this publication are the views of the authors and in no way necessarily reflect the viewpoints, attitudes, or policies of Meeting 64/128 Users group unless so stated or indicated.

All manuscripts, or any material for review or publication should be sent to the editor of the next issue (see "Editor's Desk"). Commodore MaiLink reserves the right to edit submissions.

GUEST EDITOR'S DESK
Bob Hunter

I've enjoyed putting together this issue of Commodore MaiLink. This is the third issue that I've had the privilege of editing, my also doing the September, 1990, and September, 1992, issues. However, it's the first issue that I've edited in which I haven't included an article by my daughter, Allie, indicating the amount of good material that was submitted. Thanks!

Besides having lots of good material to work with, I used two excellent programs, The Write Stuff to enter and edit the text and geoPublish to lay out the issue. Thus, whatever inadequacies that you see in the issue have to be blamed on me. I've become rusty in my use of my Commodore 128D by spending a lot of my computer time learnig the desktop publishing programs that I've gotten for the computer, the name of which I won't give here, that I inherited from my daughter when she got a new computer system for her home graphic design busness. As well, I suffer from an ailment which sometimes makes it hard for me to concentrate on what I should be doing; for further on it, see the personal note below.

A few days before the deadline for my sending a master copy of this issue to Tom Adams for copying and mailing, I received copies of "The World of GEOS Handbook" #'s 1,2, and 3, from Mrs. Jane M. Jones, a new member of our group who owns JMV Grafix of Australia. I first became aware of Jane's expertise with GEOS through her The Art Gallery column in the now defunct geoVISION International. I'll be submitting a review of her useful series of handbooks to Dan Faber, guest editor of the May Commodore MaiLink.

Dan's address is 9 Bellfield Street, Nepean, Ontario, Canada K2B 6K6. Items of more than about one paragraph should be on disk. His deadline for receiving materials is April 15. Remember that mail from the U.S. to Canada may take over a week.

In the January "Addresses", the address of Joe Powell (treasurer for Meeting 64/128 Users Through the Mail) was incorrectly given as "5366 Fairfield". The correct address is "5366 Fieldwood".

Lonnie Smathers advises that he will not answer any questions about GEOS since he is no longer on the Group Resource List.

On a personal note, thanks to members of Meeting 64/128 Users Through the Mail who have encouraged my fiancee, Leonora Raagas (a pastora in the Philippines), and me during our long wait for her to get permission to join me in Canada. The report in last September's Commodore MaiLink of our wedding was premature. I became sick a couple days before the wedding was to take place and had to return home early. Back home I quickly recovered from my physical sickness but not from my lovesickness.

Earlier I referred to my spending time learning the DTP programs that I got for my other computer. Naturally one use that I hope to make of them is to help my daughter with her business. However the other main use that I hope to make of them is one that you'd never guess--preparing printed material for an Assemblies of God Bible School in the Philippines with my fiancee after she becomes my wife. It's sure good to be retired!

CONVERTERS

Importing Text and Graphics into GEOS

by Bob Hunter

Many GEOS users use non-GEOS word processing and drawing/painting programs to prepare the text and graphics that are the basic components of a GEOS document. Here, I'll tell about the tools that I use to import text and graphics from non-GEOS sources into my geoWrite and geoPublish documents. I'll start by describing how the graphic on this page, which is part of the cover my daughter Allie prepared with the Windows program CorelDRAW for a recent issue of our family newsletter, was brought into this column.

Allie saved the graphic in PCX, the format of PC Paintbrush pictures, and I used **Iconvert** to convert it from PCX to Doodle. Iconvert is a shareware IBM program that can convert graphics from many IBM programs to CBM's Doodle, PrintMaster, and Print Shop formats and vice versa

Next I copied the graphic to a Commodore disk with the Commodore <-> IBM file transfer utility **Big Blue Reader**. I chose "N" when asked if I wanted translation to Commodore ASCII and retention of the same filenames, the latter choice enabling me to put a ",P" after each filename so that the graphic would be saved in program, not sequential, format.

Then I used **Graphic Storm** to convert the graphic into a photo scrap, which geoPublish accepts. Graphic Storm is a public domain program that can convert PrintShop, Print Master, and Newsroom (photos) graphics into photo album pages and monochrome bitmap (such as Flexidraw) and Doodle files into geoPaint or photo scrap files.

Text Converters

Both GEOS 2.0 and geoPublish include **Text Grabber**, which enables its user to take a file produced by a Commodore word processor and convert it into a geoWrite data file. It also has Form files for a few word processors so that the formatting directions from the word processor will be preserved when a text file is converted to geoWrite format.

Sometimes my daughter converts printed text into ASCII with a scanner. To use such text in GEOS, I copy it to a Commodore disk with Big Blue Reader before using Text Grabber or the public domain program **Wrong is Write** to convert the text into geoWrite format.

Graphics Converters

GeoWrite and geoPublish can import geoPaint photo scraps. Two programs that I use for producing photo scraps from non-GEOS programs are **Graphics Grabber** and Graphic Storm. The former, which is part of Berkeley Softworks's DeskPack, can convert Print Shop, PrintMaster, and Newsroom graphics into photo scraps or photo album pages.

Other graphics conversion programs I use are **Autograph, Fun Graphics Machine** or FGM, and **Icon Factory**. My first such program was Icon Factory, which not only can convert among Print Shop, PrintMaster, Newsroom, and many older drawing/ painting programs but also can enlarge graphics and reduce pictures. With it is **Grafix Link**, which can convert these to geoPaint files. Autograph is a public domain program which can convert among many popular drawing/painting programs. FGM can load pictures of all kinds and save them as monochrome bitmaps.

I also find useful the public domain program **Paint-Scrap**, which can convert a geoPaint file of any size into a photo scrap so that it can be pasted into a geoPublish document. **Scrap It!**, a similar shareware program that I haven't yet used, is highly recommended.

To use IBM graphics in GEOS, I convert them to a Commodore format with Iconvert, transfer them to a Commodore disk with Big Blue Reader, and convert them into geoPaint format or a photo scrap with Graphics Grabber or Graphic Storm.

'D/shareware programs named above can be ...ta...ed free from me.

INS 'N OUTS - Brown Boxes Inc. (Part 2)

by Joe Fenn (Kilroy)

Auto Start.. To have your box fire up with certain colors when powered up, write the following short basic program (works in 64 or 128 mode).

```
5. IF PEEK(65534)=23 THEN
A=53280:B=53281:C=241:PLAY"GCEA"
7 IF PEEK(65534)=72 THEN
A=53280:B=53281:C=646
9 POKE A,0:POKE B,0:POKE C,1: REM SET
SCREEN AND TEXT COLORS
11 REM IF IN 128 MODE AND YOU HEAR
MUSIC BUT SCREEN IS BLANK, CHECK YOUR
40/80 SWITCH AND SEE IF IT MATCHES YOUR
MONITOR SWITCH.
15 *
```

You can change the values of A, B, & C in line 9 to whatever you prefer for colors. After typing in the above do this. ^st "start" (cr) in direct mode (either 64 or 128 mode). < ^(carret) is the uparrow key.>

This puts the program into the box. Next, activate the MGR in the box you're working with, and choose "A" from its menu (Autostart a program). It will ask you for the two-letter ID of the short program above. Give it "st" and (cr). It will advise you that the box is now set for autostartup. Push your reset button and Voila! your colors are set up and the QBB Menu appears.

If however you see a blank screen (128 mode only) but hear music "my dog has fleas", check your monitor switch and your 40/80 col keyboard switch and make sure they are the same. Actually with this autoboot feature you could have any program, such as your favorite word processor or whatever, come up when power is turned on. Just choose the two-letter ID for it and use same procedures as above. In fact change line 15 of the program to "*pw" (where pw is the id" for the word processor you have in your box). Now it not only sets up initial colors, but proceeds to load your WP instead of just calling the QBB menu screen.

As you know, many programs such as the "Pocket" series are heavily protected; therefore you can't just tell the Manager to load them as it won't work. You can however (using your original PW disk) set all your defaults as you want them, including colors, print driver to use, print codes set properly, etc. Then you use something like the Super Snapshot V5 cartridge or the AR5 Datel cartridge to make a snapshot of the program. I recommend the Super Snapshot V5 as it will let you save a program longer than 202 blocks as one file rather than splitting it into two files. To get it into the QBB it must be one file unless you are savvy enough to make your own boot file by revising the ML code. You can however use the Datel AR5 to create a single file snapshot if you choose the "Turbo Save" option. The reason is the "Turbo Save" option will create a single file longer than the 202 block size limit. You must however then use the AR5 cartridge to reload the file which may be as long as 215 blocks or so. Then you use a cruncher such as DATEL "Supercrunch". This will bring the size of the file down to about 185 blocks. After that you no longer must load it using the cartridge. It now can be put into the QBB (64 mode only) as a single file. These remarks pertain only to Pocket series DSI programs which are all over the 202 block limit after snapped. Any other word processor you would rather put into the box such as "speedscript" or other unprotected versions that are not longer than approx 200 blocks you just load using the 64 manager. Programs such as "speedscript" are treated just like basic programs by the QBB manager so no need to tinker with the "entry address" or "start address". This also holds true for any files that are Blitz files.

Note "Supercrunch" is Copyrighted by RIO Datel Corp. AR5 is also their product for snapshotting. Super Snapshot V5 is produced by LMS corp of Canada. BLITZ! is copyrighted by Skyles Electric Works. I will follow up with more info on getting 128 files into your QBB in part 3.

EDITOR: A preliminary article on Quick Brown Boxes by Kilroy appeared in the November, 1993, issue of Commodore MaiLink. Part 1 of the "INS 'N OUTS - Brown Boxes Inc." series appeared in the January, 1994, issue. Part 3 will appear in the May, 1994, issue.

MINDS WITHIN MINDS

by Gregg Hoover

It may seem incredible that such menial functions as adding, subtracting, ANDing, and ORing are all that are necessary to create your favorite computer program. But the fact is that these are the most complex operations that your computer performs. And even though these individual operations are practically nothing by themselves they can be put together in various ways and executed at lightning speed to perform seeming miracles.

When we think of a brain and what it does, three things usually come to mind: First, a brain is connected to a body. It receives information from sensory organs, communicates in various ways, and moves the body and limbs. We'll call this input and output or "I/O". Second, a brain "knows" things. It stores information to be recalled when needed. We'll call this ability to store information "memory". Third, a brain thinks. It gathers information from outside and from within, makes comparisons, calculates, revaluates, rearranges, etc. to arrive at some conclusion. We'll call this "processing". Now let's see how these three things, memory, I/O, and processing, apply to your computer.

A computer is an electronic brain and its various components, the monitor, drives, printer, joystick and keyboard, can all be placed into one of the three categories mentioned above: I/O, memory, and processing. The keyboard and joystick are input devices because they take information from the outside world and send it to the computer just as your eyes and ears collect outside information and send it to your brain. The monitor and printer are output devices because they take information from the computer and send it out to the outside world, just as you do when you talk or write. The drives, cassette player, memory expansion units and cartridges are memory devices. They "remember" programming for use by the computer when needed. The focal point for all of these devices is the processing part of your computer, called the SYSTEM UNIT, where the computer does its thinking. The system unit, like the computer, can be divided into parts which fall into the same three categories as before: I/O, memory, and processing.

The monitor, keyboard, drives and other components must be connected (or INTERFACED) to the system unit somehow, and the area where these things interface is called the I/O. The I/O of the system unit contains (among other things) the SOUND INTERFACE DEVICE (SID chip) for making sound effects and music, and the VIDEO INTERFACE CONTROLLER (VIC chip) for output to the monitor. You may also have heard of COMPLEX INTERFACE ADAPTERS or CIA's. The Commodore 64 has two CIA's, and they are likewise a part of the I/O. The CIA's are used to interface the keyboard, joysticks, drive, printer, etc., to the system unit.

The memory stores information so that it may be accessed when needed. RANDOM ACCESS MEMORY (RAM) is "empty" when you first turn on the computer and must be "filled" (programmed) before you can use it. The programs which you load into your computer from your drive or type in from the keyboard are stored in RAM. Of course RAM can be changed (reprogrammed) at any time. RAM is sometimes called VOLATILE memory since it disappears in a flash if the power fails.

READ ONLY MEMORY (ROM) is permanently programmed memory which never disappears and cannot be changed. Your computer's ROM was programmed at the factory and the only way to change the program in ROM is to physically open the computer and replace the memory chip. Although unchangeable memory might sound inconvenient, the computer is absolutely useless without it. When you first turn on your computer it comes to life with random numbers in RAM. If all of the system unit's memory were RAM then the computer would be the electronic equal of an insane idiot. It would be impossible to access or control. ROM contains the OPERATING SYSTEM which provides the system with such basic instincts as reading data from the keyboard and outputting data to the screen.

The system unit's memory is divided into sections or LOCATIONS, and each location is assigned its own number, called an ADDRESS. Addresses are used by the computer to ACCESS the memory locations. Recall that the greatest number that can be represented with one byte is 255. Obviously, the CPU couldn't access much memory using one-byte addresses; therefore, TWO-BYTE ADDRESSES are used. These addresses are numbered from 0 ($0 in hex) to 65,535 ($F) for a

total of 65,536 locations. But don't be confused by these two-byte addresses! Even though it takes two bytes to ADDRESS a particular memory location, each location holds only ONE BYTE of data. Hence, when you store an ADDRESS in memory it takes TWO MEMORY LOCATIONS to hold the address. Keep this concept in mind because it WILL be used!

Now, in the above paragraph I said that the system unit's MEMORY was divided into small sections. But the word "memory" is used in a figurative sense here since NOT ALL memory addresses contain actual memory (that is, RAM or ROM). Some of the addresses are the system unit's I/O, and I/O is NOT memory! If you were to look into any address containing RAM or ROM, you would find one byte of STORED data. If you were to look into an I/O location, the data would look exactly like stored memory data, except that it isn't actually stored memory data. It is I/O data and it isn't "stored". It's just what happened to be at that location at the time you looked and the data is subject to change from moment to moment.

The part of the system unit that does the processing is called the CENTRAL PROCESSING UNIT or CPU, and as the system unit is the "brain" of the computer, so the CPU is the "brain" of the system unit. This is the part of the system unit which actually does the work of moving information from I/O to memory and back to I/O again, as well as performing the add, subtract, AND, OR, and other operations. And like the system unit, the CPU is made of several parts which fall into three main categories. These categories are--you guessed it--I/O, memory, and processing. This micro-miniature brain is the smallest brain we need look at, but since it is what ML is all about we will be looking at it in great detail. Understanding the CPU will help you greatly in learning ML.

EDITOR. This is another article in Gregg Hoover's Machine Language Tutorial."What the Heck Is a Bit?" appeared in the January, 1994, issue of Commodore MaiLink. See his tutorial offer and Jean Nance's comment on it on page 16 of this issue.

TRANSFERRING A 5 1/4" DISK TO THE FD-4000 DISK DRIVE
by William H. Mann

I bought an FD-4000 from Creative Micro Designs and had trouble transferring 1541 files to it. Support from CMD was unsatisfactory. I asked Fender Tucker and Jeffrey Jones of LOADSTAR for help, and Jeff came through. He provided information on partitions and instructions on FD-TOOLS's formatting and partitioning options. A summary of the options follow.

Formatting Options
If you plan on having 1541/71 emulation partitions on an FD-4000 drive, you must use FD-TOOLS to format your disks and format them as CMD, not CBM, Type directories. If you select a CMD partition, you'll be offered to choose density. You can format high-quality low density disks as HD (high density disks) without having to buy a HD notcher. If you're using high density disks, you'll be offered:
1. A Native partition
2. A 1581 emulation partition..
3. None.

Choose "none" if you want to add 1541/71 partitions. The disk will be formatted but will be useless until you create some partitions.

Partitioning Options
Here is where you go to mix and match partitions on your formatted FD disk. Select CREATE PARTITIONS and follow the prompts to create all the partitions that you want (or can fit) on the disk.

When you choose CREATE PARTITION, you're offered the chance to select the partition number of the partition you'll be creating. The number already there will be the lowest available. To accept it, hit RETURN

Next you select the partition type:
NATIVE
1541
1571
1581

Use + and - to change the type, and RETURN to accept..

FD-TOOLS will keep you abreast with the number of blocks free for new partitions.

Once you create a 1541 partition, you can then use MCOPY (but not Maverick or some other fast disk copier, which were not made to deal with emulation partitions) to copy a 1541 disk to that partition.

MISINFORMATION WATCH

by Maurice Jones

The misinformation: Large parts of "BETTER BASIC PROGRAMS" by Cameron Kaiser, feature article of the January 1994 Gazette Disk.

I am tempted to say, "Ignore the whole thing." However I try to provide more than opinion. Let us assume that

1.GET`A$:IFA$<>>"Z":GOTO1

is a typo, something which happens to us all. But the statement

10 DIM X$(32),FF$(17),A$,X$,C$,X,Y,T

shows an obvious lack of understanding. When the statement is executed, the two arrays are placed at the end of the BASIC program and then moved when EACH simple variable is read. Try the following two programs:

10 Z9=TI
20 DIM`X$(320),FF$(17),A$,X$,C$,X,Y,T
30 PRINT TI-Z9

10 Z9=TI
20 DIM`A$,X$,C$,X,Y,T,X$(320),FF$(17)
30 PRINT TI-Z9

The variable TI reads the jiffy clock and the number printed by line 30 is the number of jiffies (1/60 second) required for line 20.

The assertion that the computer "has more time to devote to your routine" after garbage collection, forced by FRE(X), is nonsense, and when coupled with the inference that a large number of arrays affects garbage collection, his use of the statement

30 PRINT`C$+B$+A$

shows an ignorance of the subject of garbage collection. The truth is that whether or not garbage collection has occurred does not affect the speed of any other routine. The PRINT statement causes several strings to be stored at the top of BASIC for no reason, inefficent to say the least. The statement

30 PRINT CBA$

yields the same result with no memory use.

In BYTES, Loadstar #65, I provided evidence that many of the statements commonly found in the literature about the speed of various BASIC operations are suspect. If you really want to know whether multiplying by one-tenth is faster than dividing by ten, run the following two programs.

10 Z9=TI
20 FORI=1TO1000:X=27/10:NEXT
30 PRINT TI-Z9

10 Z9=TI
20 FORI=1TO1000:X=27*.1:NEXT
30 PRINT TI-Z9

On Loadstar #66 I explained how strings are handled by BASIC and how garbage collection works. Since that time I have continued to study garbage collection and now my statement is, "Garbage collection is simply the name given to the method by which C-64 BASIC handles dynamic strings and is a clever device, contrary to conventional wisdom. If one understands it and programs accordingly, it is not a problem."

Please understand that I do not support any statements in the article just because I did not comment on them. The article is best ignored by aspiring BASIC programmers.

Disk Drive Troubles & a Recommendation

by Bruce Kurson

I was having all kinds of trouble with my disk drive. I sent it to Tycom, Inc. 503 East St., Pittsfield MA, 01201. It took them a couple of weeks to find out that nothing was wrong with the disk drive; it was my computer. I would never have guessed, considering that I could still use the datasette and cartridges. I guess that is pretty good because at least it means they were honest enough not to "fix" something that was not really wrong and charge me for it. They did act very professional and I would recommend them. They even told me which chip was probably bad in my computer.

PUNCH CARD MACHINES TO PERSONAL COMPUTERS

by Walter L. Johnson

CHAPTER 1-IN THE BEGINNING

The first computer room I ever saw was empty. I had just started to work at an army installation as a Punch Card Machine Operator Trainee. Fresh out of college, just married, no job, and a friend in personnel who had given me a tip that the installation was hiring people in anticipation of installing a computer. My college degree major was Industrial Arts, but I needed a job now so this would have to do until something better came along. As it turned out, nothing better came along for the next 25 years until retirement.

Eventually, in 1960, the IBM RAMAC 305 computer was brought in, hooked up, and checked out, and we began a unique adventure in the world of computers. The programs were a combination of alphabetic, numeric, and special characters stored on and read from a revolving magnetic drum and a large plugboard measuring approximately sixteen by thirty inches filled with wires. Some of the plugboards were so filled with wires that the access door through which they were inserted would hardly close. There was a disk storage of about twenty disks in a large cabinet about the size of a telephone booth through which could be seen a read/write arm moved by cables through electric motors and hydraulic cylinders. It was fascinating to watch that single arm move in and out, up and down, as it accessed the various records on the tracks and sectors. Yes, tracks and sectors even then.

My job as Punch Card Machine Operator (no longer a trainee after six months) was to prepare the punch cards as input to the computer and process the punch card output from the computer into the proper card format and sequence. The computer room became a showcase for visiting dignitaries to the Army installation. It was impressive to watch the banks of lights on the console blink as the program instructions were executed and watch the disk-access arm move about quickly and hear the two-card punches chomping holes in the punched cards. When asked by friends and relatives what we did at work, we were quick to inform them that "we work with a computer". The ambition of many Punch Card Operators was to some day be a COMPUTER OPERATOR! A dream not thought attainable by some was to some day be a COMPUTER PROGRAMMER! Little did we know that in the years ahead, many of us would attain those goals and even beyond.

We began to lose some of the awe toward computers when the electrical and mechanical parts began to wear out. For the insides contained vacuum tubes, electro-mechanical switches, hydraulic cylinders, cables and other components that began to fail. Then we began to realize, "Hey, these things are human after all; they can make mistakes just like us!" We began to cope with the mistakes and often could predict and head off some of the problems.

As the years went by, the word "computer" lost its impact and we settled into using its talents until it became saturated with workload and plans began to be made for its replacement. A new generation of computers was now available with newer and more reliable components and with a memory (whatever that was) and faster access time. Oh, well, we would adapt as you will see.

CHAPTER 2-PUNCHED CARD MACHINES

Even though we had a computer, its source of input and much of the output consisted of punched cards. Those of you readers who are not "chronogically enhanced" (CE) may not remember the gas bill coming in the form of a card with holes in it. You CE's may have wondered what the holes were for. Chances are, those holes were put there by a card punch from either a computer or a punch card machine related to a computer. For those of us whose job it was to handle those cards, we could read the holes and tell you what they meant.

The patterns of holes in the cards represented the numbers 0-9, the letters A-Z, and special characters such as period (.), comma (,), question mark (?), asterisk (*), etc. There were eighty columns on a card which meant you could have a total of eighty characters represented on one card. Each column contained space for twelve holes, or lack of them. The top three holes were known as "zone" punches. The topmost was the "12 zone", second from top was "11 zone" (also known as "X" punch), and third from top was "0 (zero) zone". Then beginning with the fourth punch from the top was the "1" down to the "9", the bottom punch. Now this brings up the question, when is a zero (0) a zone and when is it a zero (0)? The answer is simple--when it is punched by itself, it is a zero (0); when it is punched in conjunction with another punch, it is a zone punch.

To expand this concept for your understanding, the numerics 0-9 were represented by punching a hole in a column at the 0-9 level. For alphabetic characters it took a combination of two holes. A through I required a 12 zone

and a 1-9, J through R required an 11 zone and a 1-9, S through Z required a 0 zone and 2-9. Right away, you wonder what happened to the 0/1. It represented the special character / (slash). Most special characters required three punches, i. e., the comma (,) was 0,3,8.

As Punch Card Machine Operators, the term "deck of cards" took on a whole new meaning. A deck of cards could be from two cards to 20,000 cards though a deck of 20,000 was commonly known as a "file" into which a deck would be merged. The various input and output card decks required sorting into different sequences, merging with other types of cards or into files, interpreting and printing the punched information onto the cards themselves, and reading and summarizing into printed reports. This was done with various punch card machines, thus our job.

Suppose you have three cards with three different stock numbers whose punched holes must be interpreted and printed for your customer to read, copies must be made for your own records and merged into your file of transactions for the day, and the daily transaction report printed. Here's a typical way of doing all this:

1) Interpreter - run the cards through this machine to read the punched holes and print information on the cards. Printing is still quicker and easier to read than holes.

2) Sorter - sort lowest digit to highest digit, one column at a time. Example: numbers are 238, 614, 119.
You sort the rightmost digit first, making 614, 238, 119. Sort second digit second making 614, 119, 238. Sort third digit making 119, 238, 614, the correct sequence.

3) Reproducer - you make a copy of the card, either an exact duplicate or rearranging and/or adding/deleting information. This may be followed by additional interpreting and sorting.

4) Collator - sometimes the three transactions will be merged into a file with other transactions, updating your transaction file. The collator will do this under control of a plugboard with wires.

5) Accounting machine - the accounting machine can read the punch cards, analyze and summarize into totals, and print a report. In addition, a summary card may be punched which may start the whole cycle over.

One of the most unpleasant tasks a Punch Card Machine Operator was called upon to do occurred when one of the machines malfunctioned and jammed. This usually resulted in tearing and bending from one to hundreds of cards. The data on these cards had to be recreated, thus the operator had to reconstruct the cards as if in a jigsaw puzzle and repunch one column at a time. You can understand now why the phrase "DO NOT FOLD SPINDLE OR MUTILATE" was on the cards that you received?

CHAPTER 3: 1ST TO 2ND GENERATION

During the training sessions leading to the second generation computers, the instructor mentioned that there were no plugboards for the new generation of computers. This was a new concept for most of us as the first generation computer and all the Punch Card Machines had plugboards with many wires. How would you tell the computer what you wanted it to do if there were no wires? The answer, a memory! Now there is a new concept! How could a nonanimate object have a memory and how could it be changed to do the different tasks it must do?

The second generation of computers consisted of a small and a medium scale mainframe with peripherals. The small computer had 4k memory, later updated to 8k; the medium scale computer had 40k, later 80k, eight magnetic tape drives, four of which were switchable between computers, a high speed printer and card punch for each computer, and an unlimited (ha-ha) disk storage device for the medium scale computer. The disk storage device even had a read/write arm for each disk.

By now, some of the Punch Card Machine Operators had been promoted to Computer Operators and the responsibilities and problems therewith. The programs were now punched into card decks or stored on the magnetic tape or disk storage device. The programs ran much faster though there was still much card input and output. Larger files were stored on the magnetic tape or disk storage. This reduced the amount of card files but additional applications replaced any personnel and time savings.

A programming LANGUAGE called AUTO-CODER was used to tell the computer what to do. This was a shorthand which directed the computer's actions. The AUTOCODER instructions were translated into machine language and stored in the memory and executed. One could actually see the memory, a box of little metal doughnuts strung on wires. Temperature was very critical; too hot or too cool and the memory did not work correctly.

When a program did not work correctly, whether programming or hardware, and the computer hung up, it was said to have "crashed". The comment from the programmers was usually, "Programs are like airplanes, you only hear about the ones that crash."

EDITOR: This is the first half of a six-chapter story.

1541C NOISE
by Bob Estand

In the September MaiLink, Ken Bronson had a question about chattering in 1541C disk drives. I had owned several 1541s over the years, and their normal operation was quiet. Recently I acquired a 1541C that exhibited the "formatting noise" Ken described. I considered this abnormal and certainly not good for head alignment. I was familiar with the solution described in the 1989 Special issue of RUN.

I opened the drive and located a designation on the printed circuit board listed J-3. This was very close to the large multiple plug-in connector on the board. It is a circle about 1/8 inch in diameter, of silver conductive material. The circle is divided in half, with a small ribbon of material connecting the two halves. You may be familiar with the method of changing the drive from 8 to 9 by cutting the strap. I cut the strap, separating the circle halves with a sharp Erecto knife. If this didn't work, I could redo the connection with a drop of solder. There was no "wire to tape" as mentioned in the "helpful hint" article in RUN. This "wire" may or may not be found in other units.

After I cut the strap, the unit is now quiet on turn-on and has been performing perfectly ever since the "operation" on its innards. I would appreciate hearing what results anyone else had with this modification.

CEE-64 ALIVE DISK
by Tom Adams

I will send a copy of Cee-64 Alive Demo Disk #3, as described in the January MaiLink, to any member who will send me $1.00 (check or stamps) to cover my costs of providing it.

MOUSE/JOYSTICK SWITCH
by Joey Holman

I'm sure most of us who use a mouse and a joystick have had the annoying task of plugging, unplugging and swapping ports for different programs. My solution was to buy two 9-pin AB type switches. I use one to switch between mouse and joystick and the other to select port one or port two. These are fairly easy to find, either in computer stores or by mail order. If you don't live near a computer store, just pick up a copy of Computer Shopper and you will find dozens of mail order companies that offer them. I got mine for under ten dollars each

You will also need some 9-pin cables. The switches usually come with female connections, so you will need two male-to-female cables to connect to the joystick ports, one male-to-male cable to connect the two boxes together. And if you want to extend your mouse and joystick cables, you will need either two male-to-male cables or two male-to-male gender changers.

This will make switching between ports and input devices quick and easy. Also, since neither joystick port is left open, there is no danger of damage. There are a couple of drawbacks however. If you already have a cluttered desk, you may not have room for the mess of cables behind the boxes. Also, if you use two joysticks or plan to use another device such as a paddle on occasion, this solution can be more irritating than it is helpful.
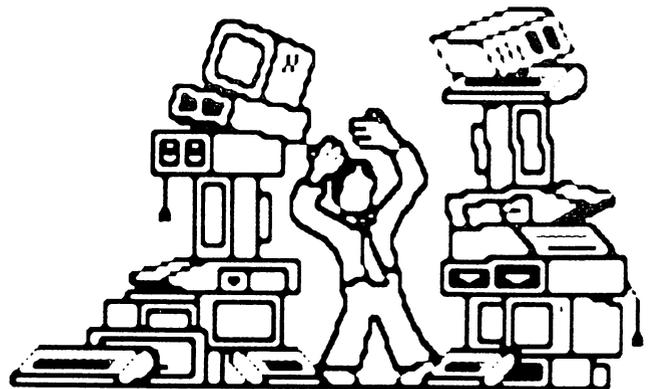
WANT TO CREATE YOUR OWN FAMILY TREE?

by Dan Faber

Have you ever wondered where your grandparents or great grandparents were born or in what town they met, courted, and raised their children? The aboriginal claims, which we hear so much about today, should make us think hard about what county or continent our families have roots in. If you have any interest or need to research your family history, then I recommend you start talking to some of your older uncles, aunts, or grandparents. Then obtain a copy of Pedigree 3.0 to allow you to organize your family history data.

Pedigree 3.0 is a shareware program occupying both sides of a 5 1/4" disk that allows genealogical data to be organized, saved, and printed. Although it consists of twenty modules, I use only five on a regular basis: 1. Pedigree DB, 2. Chartmaker, 3. Chartprinter, 4. Recordmaker, and 5. Recordprinter. The first item of business is to set up the system according to your hardware arrangement, i.e., one drive, two drives, etc. The next procedure is to format two different data disks, i.e., a data disk for use mainly with the Pedigree DB module, and a non-data disk for use mainly with the Chartmaker, Chartprinter, Recordmaker, and Recordprinter modules. A TUTORIAL program will take you through the entire system to help you with the modules.

PEDIGREE DB is the data storage and maintenance program for the system. Its menu includes: 1) APPEND, 2) DELETE, 3) SEARCH, 4) HELP, 5) BASIC, 6) RESET, and 7) MENU. Append is used to add data to the family database. Delete is used to delete an individual (all the data compiled for a person). Search is used to add and change vital statistics for an individual (vital statistics for a person include: name, date of birth, place of birth, date christened or baptised, date of marriage, place of marriage, date of death, place of death, and spouse). In the "Edit Mode" spelling can be changed, a date added or changed, etc. Help is used to give some guidance if you have forgotten the commands. Basic is used to exit the program and return to the Basic screen. Reset is used to move from one menu on one side of the program disk to the other side. Menu is used to return to the Main Menu of the

system in order to select another module.

CHARTMAKER is used to create a family tree for all the names collected. It obtains the data from the Pedigree DB database. Its menu includes: 1) MAKE, 2) PRINTER, 3) BASIC, and 4) MENU. Select Make to create a basic family history tree for you and your direct ancestors and descendants. This chart provides space for one person, a mother and father, two pairs of grandparents and four pairs of great grandparents. Brothers and sisters, uncles and aunts, cousins and second cousins, etc. go on family group forms available from the Recordmaker and Recordprinter modules, described below. Printer is used to load the Chartprinter module and prints the chart that has just been created.

CHARTPRINTER can be loaded either directly from the Main Menu or from the Chartmaker module. Its menu includes: 1) BLANKFORM, 2) LOAD FORM, 3) UPDATE, 4) SAVE FORM, 5) PRINT, 6) BASIC, and 7) MENU. Blankform can be selected to bring into memory a chart which is completely empty. Here a chart can be "made" by typing in all data, consequently bypassing the method of creating a chart with use of the Pedigree DB and Chartmaker modules. Load Form is used to load various forms which have been created and saved on a non-data disk. Update is used to edit the Family Record form which was previously created or to create a new chart. The entire form is accessible on the screen and names and numbers can be changed at will. Save Form is used to save the editing changes made with Update.

RECORDMAKER is loaded from the Main Menu and obtains the data from the Pedigree DB data disk. Its menu includes: 1) MAKE, 2) PRINTER, 3) BASIC, and 4) MENU. Make is used to create Family Records for you, your ancestors, and your descendants. This family record form allows children to be recorded, including date and place of birth, date and place of marriage, vital statistics of parents and names of grandparents. The remaining items on the menu are similar to those for Chartmaker, described above. Most family records in my family are not included in the Pedigree DB database, so I create most Family Records with the Recordprinter module, described below.

RECORDPRINTER can only be loaded from Recordmaker. Its menu includes: 1) BLANKFORM, 2) LOAD FORM, 3) UPDATE, 4) SAVE FORM, 5)

PRINT, 6) BASIC, and 7) MENU. The functions of these selections are similiar to that of Chartmaker, described above.

This program, Pedigree 3.0, can be downloaded from Q-Link or obtained from a member who has it in his/her collection. If the "Tutorial" and "Read it" files for each module are not explanation enough, one can write to me or someone else who has experience with the program. The author has given up support of this Shareware program. I highly recommend Pedigree 3.0 to help with family history research.

BOBSTERM PRO
by Jean Nance

"Bobsterm Pro", available in versions for the C-64 and the C-128, is one of the few commercial terminal programs for telecommunication. There are a lot of term programs which are public domain, and a few are outstanding. I have used several of them, but my choice is Bobsterm. This review could go on for several pages if I described all the features. I will merely tell how I use it and the features I use. I own both BobsTerm Pro 64 (BT 64) and Bobsterm Pro 128, (BT 128). The differences are minor.

When the program loads I go through a couple of menus to the "phone book". This lists each of the four bulletin boards I use regularly. You may have any number of phone listings, limited only by disk space for the needed files. Setting up a file is easy. You set up parameters such as baud rate for each board, including the F key strokes which will enter a different name, entry code, etc., for each. You can choose to ring one board or several. If you choose several, each will be tried in turn until a board is found with an open line.

The buffer in BT 64 is 28,500 bytes; the buffer in BT 128 is 60,000 bytes. You can put material into the buffer from the keyboard or load it in from disk, or you can save anything on the screen while you are on-line to the buffer. Anything in the buffer can be added to a message with a keystroke, or it can be saved to disk or printed out on a printer. That is how I get the items that sometimes appear in the MaiLink from various bulletin boards.

I have done some uploading and downloading of program and text files using BT. The procedures are simple and run from a menu. In order to access Internet

(See comments in the January MaiLink), I needed "VT100 emulation". I confess I have no idea what this means, but it was very simple to set the parameters for my Internet access to that mode. BT 64 apparently does not have that feature.

The manuals are clear and well-organized, are spiral-bound, and have a hundred or more pages. They are not indexed, but the table of contents is very complete. You do have to spend some time reading and re-reading them, I admit, but that is true of the manual for almost any full-featured program.

"Software Support International" offers BT 64 for $19.97, and calls it "probably the best telecommunication program ever written for the C-64". I can't find a source for BT 128. If it is no longer being produced, it is a shame. You could keep your eyes open for a used copy.

REAL TIME CLOCK
by Howard Gold

What a little wonder Progressive Peripheral's BBRTC or Battery Backed Real Time Clock is! Inserted into joystick port no. 2, it is about one inch by three quarters of an inch and consists of a nine-pin female plug to which is attached two long screws and a tiny box-like arrangement concealed beneath a heavy coating of rubberlike material that obviously acts as insulation and protection. The gadget vaguely resembles a dongle and, once installed with the aid of a program written for it, works like a charm. I don't know how but, man, it does! It really keeps accurate time, and I can't understand how so tiny an object can contain a clock and a battery to run it. And so accurately! I take my hat off to Peter Fiset, the inventor of this little beauty. An RPI graduate, he's been contributing clever pieces of equipment for the Commodore computer for quite some time, among which are CMD's RAMDrive and RAMLink.

It does have one drawback however. Its programs are written for forty columns and so after booting Gateway, which only boots in eighty columns, I have to switch to forty for the clock to set the exact time to the screen and then back to eighty. But that's minor and hopefully, if Peter sells enough of them to Gateway users, he will write the program for eighty columns also. Oh yes, there are programs included to work on the Commodore 64; probably that's why the forty columns.

PROBLEMS

QUESTIONS

If you can help with any of the following problems, please write directly to the person who asks the question as he/she may need help right away. Also, please send a copy of your answer to the editor of the next Commodore MaiLink, Dan Faber, so that other members may read it.

JOEY ASHBY. I have a 1541 disk drive (Newtronics) that loads all software except Print Shop Companion-- Calendar. The rest of this program also loads fine. Alignment checks good and the Calendar loads with other disk drives. Any ideas?

LUKE BAARS. Does anyone have any experience with re-inking rolls for daisy-wheel printers? New ink rolls for my Lettermaster daisy-wheel printer are nearly impossible to get. What ink should I use, what should I watch out for? Or perhaps I shouldn't do this at all?

BOB BURNS. I use a Mach 128 cartridge (fast loader...) on my 128. On occasion I have tried to run Big Blue Reader and it does nothing after the title screen loads. I have tried disabling commands on the cartridge, but BBR still does the same thing. The only way I can get BBR to run correctly is to remove the cartridge. Then everything is fine. I would rather not keep keep removing the cartridge if I could avoid it, but that is all I can do right now. I don't really use BBR that much, so it is not a major problem but an annoyance. Does anyone know of a solution to my problem?

BOB BURNS. I am working on learning assembly language programming, again. The book I started on first is called Commodore 128 Assembly Language Programming by Mark Andrews published by SAMS. Most of the type-in programs were written with a Merlin 128 assembler. I am using Power Assembler (PA) from Spinnaker. My problem is this: some of the pseudo-ops in Merlin are different from PA and the author doesn't explain what they mean. For example, the pseudo-ops ASC, DFB, and HEX in Merlin can be replaced with a .BYTE in PA. The one I can't figure out is DS. Any comments or help would be appreciated. This is also not a major problem since I can substitute an '=' and a memory address and it works in PA.

BOB BURNS. I use DesTerm 128 v2.00 for my telecommunications. Lately, one of the boards I usually call daily has gotten very busy. I would like to set up a multiple dial so it will keep calling until it gets through but I am not sure if it is working correctly. Let me explain, usually I use C= D to bring up the dial directory, highlight the number I want to call and hit return. The modem speaker tells me what is going on. When I use multiple dial, the first time it calls, the modem speaker is fine, but for all the subsequent calls the modem speaker has been turned off. Can anyone suggest anything I can try to remedy this problem? Maybe I am setting up the multiple dial wrong?

WALTER JOHNSON.

I recently decided to make the hardware device # change to one of my 1541 disk drives to cut down on disk swapping. Getting the trusty manual down and turning to page 82, I followed the instructions. After describing how to find the "jumpers" on the circuit board, the manual states "Jumper 1 is toward the rear, and Jumper 2 toward the front of the drive."

Then the following chart, describing the effect of cutting the jumpers:

Device #	Jumper 1	Jumper 2
9	cut	
10		cut
11	cut	cut

Well, I cut Jumper 1, reassembled the drive, hooked it up and behold, now it was device 10! Disassemble again, cut Jumper 2, hook it up and behold, now it was device 11! At least they got that right. A trip to Radio Shack to get a soldering iron and a very delicate resoldering of Jumper 2, and I now have device # 9.

Question: Has anyone else run across this problem? Copyright date on the manual is September 1984 and I purchased the drive 4/30/86. Either the manual is wrong or the writer did not know the difference between front/back.

EMIL KALAR. Does anyone know of a source other than V-Tech for red ink that is red instead of hot pink and brown that is browm and not lavender? Any help would be greatly appreciated.

WAYNE ROSARIO. Does anyone know how I can get 80-column with my C-128 and a T.V.?

WAYNE ROSARIO. How can I convert a self-running Doodle or Koala to view it with a Doodle viewer or Koala viewer?

QBB DISCOUNTS
by Joe Fenn (Kilroy)

Jean Nance has asked if I would handle orders to Brown Boxes Inc so we members can get these terrific discounts on their QBB boxes. I have agreed to do so and following are the details. All QBB boxes come with their software already installed in them. They plug into your cartridge port or extender if you have one. They retain their memory contents for 6 to 10 years even though you turn the computer off.

The orders can be mixed, i.e. if we get orders for one 64k box, one 128k box and/or one 256k box we get the listed discounts. We must submit orders of three or more to get these discounts however.

	Pricing	
	Single	Three or more
64k	$79.00	$65.00
128k	$129.00	$105.00
256k	$169.00	$135.00

To these prices you must add $4.00 for shipping/handling within the USA or $6.00 for outside the US. All checks or money orders must be payable in US dollars. Make all checks payable to BROWN BOXES INC. Send your orders to me at my address below. I will in turn wait till we get the required minimum of orders and then forward your addresses/checks/etc to QBB Inc. Your QBB's will be shipped direct to your address as shown on your order. Please include address with order to preclude any misdeliveries due to recent address changes. Don't fail to include S/H charges. We in CHUG (Commodore Hawaii Users Group) took this as an offer we just couldn't refuse at these prices.

(Editor: Addresses at bottom of next column)

CMD MAGAZINE?

According to a rumour heard by Jean Nance and reported to me (the Guest Editor), Creative Micro Designs will be publishing a magazine and can be called on at an 800 number by anyone wishing to subscribe. Specific details will be given in the next issue of Commodore MaiLink if they can be obtained.

CBM IN TROUBLE
(report by Jean Nance)

A couple of messages on the Internet bulletin board, CBM, on January 30th are of interest.

John MacDonald, a shareholder, reported he had received a statement from the company listing large debts and a very serious financial situation. Even if the company could sell off all its assets, it would still be 53 million in debt. They asked shareholders to sign a proxy allowing for dissolution, merger, or liquidation of the company. John's conclusion: "Expect Commodore to go bankrupt within a month."

Tony Bossaller had a rebuttal. He feels Commodore is in no worse shape than it has been for some time and that its debts are no worse than those of many companies. He challenges John's statement that CMB stock is $2 a share, but claims it is 3 1/8 and has been at that level for several months. Also, as he points out, if the company should fold it wouldn't matter much to most Commodore users since they no longer support our machines anyway.

Another person on the net suggested some people might want to buy up a few "souvenir" shares.

BUY - SALE - TRADE

WANTED by Joey Ashby:
Sticky Bear Reader and Body Transparent (software).

WANTED by Harold Elig:
Commodore 128 Programmer's Reference Guide, Bantam. 1-912-355-0412.

WANTED by Regan Feist:
January 1986 and May 1987 issues of "Compute's Gazette".
The Anatomy of the C-64, Abacus.
Printer Book for the C-64, Abacus.
Cassette Book for the C-64, Abacus.

WANTED by Walter Johnson:
Dragonriders of Pern (software). Must have documentation with it. Will buy or trade.

WANTED by Robert Reeves:
The Official GEOS Programmer's Reference Guide, Bantam.

WANTED by Robert Reeves:
Hitchhiker's Guide to GEOS.

FOR FREE from Bill Lyons:
Ahoy, April 1986 thru January 1988.
Commodore, 1984 thru 1989.
Compute Gazette, May 1984 thru June 1990.
Run, March 1985 thru Nov/Dec 1992.
For cost of shipping.

FOR SALE by Joey Ashby:
Commodore Magic Voice Speech Module, $15.
Commodore 1701 Color Monitor, $50.
Star SG-10C Printer, $30.
GEOS Super Package (GEOS 128 v2.0, geoPublish, geoWrite Workshop, geoFile, Deskpack Plus, Fontpack 1, GEOS Companion, Geos Power Pak, Perfect Print LQ), $65.
Shipping will be added to all prices.

FOR SALE by Regan Feist:
The Anatomy of the 1541 Disk Drive, Abacus, new, $10.
The Faerie Tale Adventure Hint Book, Micro Illusions, new, sealed on bubble plastic card, $5.
Kindercomp (a cartridge with six reading readiness and counting skills programs for ages 3-8), Spinnaker, $5.
Rainbow Quest Computer Adventure (25 children's programs--mazes, number and word puzzles, arcade games--with read-along book) by Richard Ramella, in notebook-size, hard plastic case, $15.
Deadline (role-playing murder mystery game), Infocom, new, sealed in factory package, $5.
Shipping will be added to all items.

FOR SALE by Bob Hunter:
Partner 128 cartridge.
Programming aids (books and software).
Educational software (programs for teachers and for elementary school pupils).
See my article in the March 1991 issue and my for sale item in the September 1992 issue of CML for some titles that I might still have and be willing to sell.

FOR SALE by Walter Johnson:
MSD SD-2 disk drive. This is a dual disk drive and I do not need it. $50.00 plus postage.

FOR SALE by Jean Nance:
"RUN", '90 (8 issues), $11.
"RUN", '91 (7 issues), $10.
"Commodore Power Play", Spring '84, Oct/Nov '84, July '86, $5.
"Ahoy", Sep '86, May '87, Aug '87, $6.
"Transactor", Vol 5, #s 2,4,5,6, $10.
"Transactor", Vol 6, #s 1,2,3, $8.
"Transactor", Vol 8, #1, $2.
"Transactor", Vol 9, #s 1,2,3,4,5,6, $12.
"INFO", Dec/Jan 89; "Popular Computing", Aug '84; "Compute", Jan '84; "Compute's Gazette", May '89; $1.50 each
All prices include shipping. Please don't send money before checking with me to be sure the items you want are still available.

FOR SALE by Jean Nance:
Back issue MaiLinks: Sep '92, Jan, May, July, Sep, and Nov '93. $1.25 each, postpaid. Stamps, or check made out to "J.Y. Powell Jr."

FOR SALE by Robert Ritchley:
1581 disk drive with manuals. $50 plus shipping. Call first. (618) 283-3360.

FOR SALE by Sharon Serpe:
1541-C newer model with the light tan casing. Needs work or can be used for parts. $25 plus shipping.

FOR SALE by Sharon Serpe:
IBM shielded printer cable. New. $7 including shipping.

FOR SALE by Sharon Serpe:
Plundered Pirates, $5.
Decision in the Desert, $6.50.
The Pawn, $10.
Bard's Tale, $8.
Software in original boxes with documentation. Shipping included.

FOR SALE by Sharon Serpe:
Commodore 1660, 300-baud modem. $7.50 including shipping.

ASSOCIATE EDITOR WANTED

"DieHard" magazine has a position open for an Associate Editor. Should have extensive Commodore experience, writing skills, enthusiasm. Must relocate to Boise, Idaho. Write for more information, or send resume and writing sample to:

LynCarthy Enterprises
Personelle
P.O. Box 2780
Boise, ID 83701.

COMMERCIALS

ADDRESS LABELER
Robert Ritchley has made an address labeler program in which he is entering the names and addresses of Meeting 64/128 Users Through the Mail members. He is offering it free, except for $3 for disk and shipping, to club members.

COMMODORE 8 BIT SALES AND SERVICE
I (Jean Nance) got a mailing from SoDak Electronics. 603 S. Mable, (that is "Mable"), Sioux Falls, SD 57103. They offer repairs and service, such as installing reset switches or 64K Ram. They offer Commodore hardware at attractive prices with a 90 day guarantee in most cases. They also buy used Commodore equipment. They promise 3 to 5 days turnaround and 60 day warranty on repairs. I know nothing about this company. Three phones are listed, including 800-201-3004. It looks like a reputable outfit, but it's up to you if you feel like taking a chance. If they accept credit cards, that is the best way to guard against problems.

ML TUTORIAL
If you are interested in learning more about machine language, I (Gregg Hoover) am offering a primer for the absolute beginner. It assumes minimal knowledge of BASIC and NO knowledge of machine language, focusing on preliminary subjects that you'll need to know BEFORE you start working with an assembler. This includes binary, hardware, registers, flags, instructions, addressing, assembly language, and ML monitors. The disk is fast loading and the text, which can be printed out on your printer, totals 50 pages of single-spaced type. Price is $1.50 or five 29 cent stamps.

Note from Jean Nance: "What the Heck is a Bit?" in the January Commodore MaiLink and "Minds in Minds" in this issue are two of the introductory articles in Gregg's tutorial. From them you can see the style and the level at which it was written. I have seen the disk and think it is an excellent buy. The price barely covers Gregg's cost for disk and shipping and offers nothing for the many hours of work the tutorial represents. If you would like to be generous, send more.