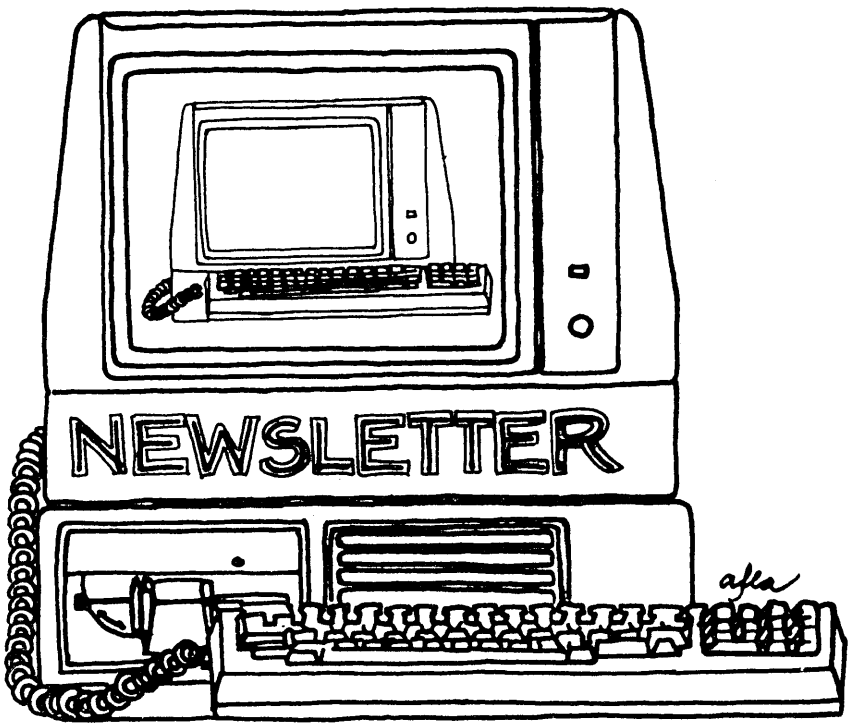
November 8, 1985 Volume 3 Issue #10

BAY AREA MICRO DECISION USERS ASSOCIATION

BAMDUA



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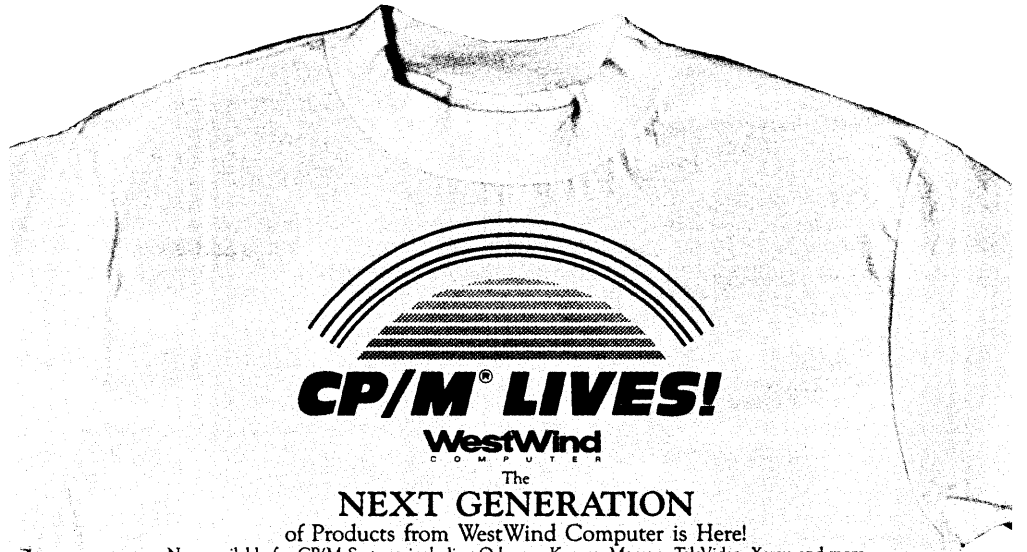

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This Newsletter is printed by Bacchus Press, 1715 University Ave., Berkeley, CA. 94703, (415)843-8130.

NEWSLETTER

If you wish to submit material to the newsletter, please follow these guidelines:

- Submit material before the 23 of each month
- Submit hard copy along with a WordStar file on a SSDD or DSDD diskette; left margin, default; right margin, 68 and right justified. (NewWord files are acceptable).
- Include your name, address and telephone number Your disk will be returned to you.
- Send newsletter materials to: Newsletter Editor
  BAMDUA
  P.O Box 5152
  Berkeley, CA 94705

If you have questions about newsletter submissions, call me afternoons only on Wednesday or Friday (415-843-8167). If you have other questions about BAMDUA, call the BAMDUA Office, 415-644-2805. If you need technical help, use your DIRECTORY.

IMPORTANT: If you have something you especially want in the next Newsletter but are unsure you can get it in before the deadline, be sure to call me so that we can make special arrangements. If it doesn't matter to you when it is published, then you do not need to be concerned about the deadline; just send it in when you have it ready!

Please remember that the deadline is important in order to enable me to plan and produce the Newsletter.

If you have tried one (or more) of the utilities available on the library disks, write a review and send it in! If you know the answer (or think you do) to new or recurrent questions in the Notepad or Mailbox departments, write me so that I can make the information available to all.

We reserve the right to edit articles submitted for publication. In keeping with the spirit of "public domain" we grant permission for articles appearing in this Newsletter to be reprinted by other users' groups for the purpose of free dissemination of information as long as proper identification is made of author and source.

Thanks. —Georgia Babladelis, Ed.

BAY AREA MICRO DECISION USERS ASSOCIATION
A Morrow computer users' group

Monthly newsletter, Vol. 3, Issue 10 November 1985

BAMDUA, P.O. Box 5152, Berkeley, Ca 94705
(415) 644- 2805

BAMDUA, the Bay Area Micro Decision Users Association, is open to all who are interested in Morrow's Micro Decision computers. Membership fee is currently $16 per year and includes a subscription to our monthly newsletter. For information, membership application forms, etc., please send a self-addressed stamped envelope to the BAMDUA P.O. Box.

The BAMDUA office is open 8:30-4:30 weekdays; the answering machine or a call-forwarding BAMDUA volunteer will take your messages from 12:30 on. When Dana is in the office, she will answer the phone in the morning.

The main BAMDUA meeting is held the last Tuesday of each month.

+++ Next main BAMDUA meeting: +++++++++++++++++++++++++++++++++++

WHEN:	Tuesday, November, 26, 1985, 7:30 p.m.
WHERE:	West Branch, Berkeley Library 1125 University Avenue, Berkeley
SPEAKER:	David Price of WestWind will give a briefing on various exciting new enhancements offered for Micro Decisions (See From the President's Disk for more information on this)
ALSO:	Annual Business and Elections Meeting

++

PLANNING AHEAD: Information about future meetings to be announced.

LOCAL MORROW USER'S MEETINGS:

MUG/MARIN (Marin Users' Group) meets on the fourth Thursday of each month at 7:30 p.m. The address is P.O. Box 925, Mill Valley, Ca. 94942. For information, contact Susan Miller (415)383-6276 or Jim Kelly (415)472-1499. The group describes itself as a small but stimulating group which tries to diversify information for both novices and pros alike.

Stanford Morrow Users' Group, (S.M.U.G.) meets on the 2nd Wednesday of the month at 7:30 PM on the Stanford campus: Polya Hall (also known as Turing Auditorium), room 111. Info: Ed Gallaher (408) 749-9285 (H)

SCMDUG (Santa Cruz Micro Decision user's Group) meets on the first Thursday of the month. There is always a demonstration of some mutual interest. There is a new meeting place, as yet unknown. Call for information: Marianne Russell, Sect., 408-438-0662; or Daniel Payne, Pres., 408-476-0203. The new mailing address is: SCMDUG, c/o Marianne Russell, 376 Lucinda St., Scotts Valley, CA 95066.

PETMUG (Petaluma Users' Group) meets on the 4th Thursday of each month at Advanced Information Management, 245 North McDowell Blvd. (in Petaluma Plaza), Petaluma, CA. For info. contact: Don Waite, 707/763-6891 or Dick Hoffman, 707/762-8286 or mailing address: P.O. Box 948, Petaluma, CA. 94953.

CLASSES:

Until now, we have offered classes on MODEM7, INTERMEDIATE CP/M, a NOVICE EMERGENCY CLINIC for beginners, PERSONAL PEARL for beginners, PUBLIC DOMAIN SOFTWARE, QUEST ACCOUNTANT PROGRAM, and an ADVANCED CP/M and SYSTEMS class. Now it appears that there is not enough interest in them to continue offering these classes. However, if interest grows in the future, these classes will be made available again. Classes will then be scheduled when enough participants sign up for them. For information, call BAMDUA (415) 644-2805.

ANNOUNCEMENTS

DIAL A DEAL, the computerized call-in classifieds now has free modem access. DIAL A DEAL will advertise any item until sold for only $20; you may be as descriptive as you want; there are no line charges. DIAL A DEAL advertises on television, radio, and direct mail. It reaches approximately 2,000 people monthly throughout the Bay Area. It is absolutely free to shoppers, who can either call in to an operator and say what they are searching for, or can use the modem access and browse at leisure 24 hours a day. To call the DIAL A DEAL operator: 408/923-DEAL, or 800/428-9090. The modem number is: 408/272-0383.

DVORAK DVELOPMENTS (Sic), P.O. Box 717, Arcata, CA 95521, predicts the new wave in word processing productivity lies in conversion to the Dvorak Keyboard. They now have a newsletter that reports on ergonomic layout and the efforts of businesses converting to it. It is published quarterly and costs $12/year. The Fall issue is a special promotional edition and features an overview of the many products available which support the keyboard. BAMDUA readers may get a free copy of this issue by sending a 6x9" self-addressed envelope with $0.39 postage. If you mention BAMDUA in your request, you will also get a special informational brochure describing how to convert computers to Dvorak.

FROM THE PRESIDENT'S DISK

by Sypko Andreae

I paid two interesting visits in the previous weeks. First I went to Morrow, where I had not been for a while. Tony Adams--as ever very helpful--completed with me the transactions needed to get the material for the Technical Manual and Schematics which you will soon be able to order from the Morrow Owners' Review. Then I talked at length with John Seamster about goings on at Morrow. They are doing all they can to produce PIVOT II machines and feel better able to focus on that effort now they have dropped the Micro Decision line.

John invited me to take a look at the assembly line. I remembered what it looked like about a year and a half ago. Now it looks quite different. The single U-shaped assembly line of old is replaced with one or two main assembly lines joined at frequent intervals with shorter feeder lines. It looks complicated but well organized. "It is in the hands of engineers right now," said John with a proud gleam in his eye. That made me wonder in whose hands it was before, but I forgot to ask.

The PIVOTs come in two shades (for now): Black ones for Morrow and white ones (with blue-ish LCD screens) for Zenith. I like the looks of the black Morrow machines better. Is this just a bias rooted in some sort of inane loyalty? I just heard from a usually reliable source that Morrow owners are known in the industry as very brand-loyal group. I asked lots of questions and got a few answers. They conjure up a picture of tiny Morrow battling hard to get the money a bunch of parts just in time to produce the next batch of PIVOTs. Will they keep their head above water?, I asked in October. Yes, John assured me, it looks okay till November. Time to ask again, I suppose.

My next visit was with WESTWIND in Emeryville, CA. David Price was my host. I was late for the Friday 4 PM appointment, because we had a rare power failure in the neighborhood where the BAMDUA/MOR office is and I had been worrying about hard-disk crashes. So, I forgot about WESTWIND. But David Price, WW's chief executive, kindly called me at 5:30 PM and said: "We're still here. You wanna come?" I got red in the face and was right over. Soon I was in the company of David and three of his engineers/programmers. For the next three hours they gave me a intense and fascinating briefing on their new products aimed at the CP/M world, and especially at Osborne's, Kaypro's and Morrows.

We already know about their hard-disk additions for Morrow floppy-based machines. Now they have a whole new line of products aimed at enhancement of CP/M machines in various ways. It involves RAM disks that can double as printer buffers, cache memories for hard-disk ad-ons, giving you MD11-like power with vastly more capacity and features. David Price and friends will come to our November 26 meeting to tell you about their undying dedication to the CP/M world. Don't miss it.

ANNUAL BUSINESS MEETING AND ELECTIONS

On November 26 we will hold our annual business meeting and elections of board members. Newcomers are especially urged to take this opportunity to participate in the workings of BAMDUA. We have a number of vacancies that must be filled, and your talents are urgently needed. Most especially, if you have some leanings towards organizing our advertising or doing financial analyses, please nominate yourself! Do not be bashful!

First, these are the current incumbents: Sypko Andreae, Peter Campbell, Georgia Babladelis, Gene Korte, and Stan Naparst.

We would especially like to acquire an Advertising Manager and a Treasurer (as announced last time, we are losing Dave Rosner's excellent services).

If you or someone you know wants to participate in BAMDUA just nominate yourself (or friend) to become a member of the board. At the board's next meeting, your special talents and/or wishes will be taken into account in filling positions. Don't be bashful; don't hide your talents from us.

BAY AREA MICRO DECISION USERS ASSOCIATION (BAMDUA)
P.O. Box 5152
Berkeley, CA 94705
415/644-2805.

Please fill out the following form and send to the address above if you wish to nominate yourself or any other member of BAMDUA for position on the Board of Directors. If you have any questions, call Dana at 644-2805.

If you plan to attend the meeting on Nov. 26, you may bring this nomination form with you to the meeting rather than mailing it.

I wish to nominate _____
to be a member of the BAMDUA board.

ADDRESS _____

_____

TELEPHONE: ( ) -

_____
(NOMINATING MEMBER'S SIGNITURE)

(REMINDER: Mail this form to BAMDUA or bring it to the Nov. Meeting)

ANNOUNCEMENT

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There are lots of nice ways to say "Thank you." One of the nicest is, "We'll give you the best software at the lowest price," with special offers to you when you and your group buy Borland software.

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An ongoing revolution because we're not sitting on our hands.

New products are in the works. Original products have been improved and enhanced. Current products are top of the line and top of the charts. None of this would have happened without you—and we haven't forgotten.

You gave us a start, so we're giving you a break. Get your group together, figure out what you need and our Sales Department will figure out the rest.

We're easy to talk to. MCI Mail: BORLAND; CompuServe: GO BOR; Telex: 172373; 800-line Ordering Service: 800-255-8008 (Outside CA), 800-742-1133 (Inside CA), 6 a.m. to 9 p.m., Monday through Friday and 8 a.m. to 5 p.m., Saturday and Sunday; The former "Ma Bell": (408) 438-8400, ask for the Sales Department. And we live at 4585 Scotts Valley Drive, Scotts Valley, CA 95066.

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SPECIAL DEALS

1. EUREKA!

EUREKA is a well-regarded and well-reviewed catalog program. See the last two issues of our Newsletter for a review of the program and specific information about group rates. EUREKA! was reviewed in BAMDUA Newsletter, V.3,#8, Sept. 1985, p.14.

STATUS REPORT: Seven people have requested Eureka!, which means that we can hit the 30% discount rate; three more orders will place the group in the 35% category. I will hold on for a short time after this issue is out, and then close these orders and go ahead. So if you are interested, write me ASAP - it can make an important difference in cost now, but not later!

2. ELECTRA-FIND

ELECTRA-FIND is a powerful program for finding and extracting information from your files on single or multiple disks. It is available to BAMDUA members at $20 off the regular price of $65. Version 3 is now available (see review update, this issue). You need a coupon to get the discount. Write me for a coupon; include an SASE for return. Coupon offer expires Dec. 31, 1985. ELECTRA-FIND was reviewed in BAMDUA Newsletter, V.3, #8, Sept. 1985, p. 11

STATUS REPORT: Very popular. A few coupons left.

3. TYPEWRITER

TYPEWRITER: Produced by MicroCost, this software allows you to use your computer and printer system as though you had a typewriter.

TYPEWRITER was reviewed in the last issue, BAMDUA NEWSLETTER, V. 3, # 9. Check that issue for details of offer also.

STATUS REPORT: This is in popular demand. I now have 10 orders thus qualifying for the 50% discount. This order is about to go in. I will start a new order so, if you are interested, write ASAP, and include SASE!

4. SHADOWPRINT

SHADOWPRINT software by Common Sense Systems Associates permits you to "spool" files into an invisible queue that automatically sends them to the printer while you continue with your work, perhaps editing or creating other files. Version 3.2 is now available. A review of the program and details of the discount offer can be found in the last issue: V.3, # 9, October 1985.

STATUS REPORT: Two orders received; still open.

5. DATAPLOTTER

DATAPLOTTER: this program allows you to plot and print your data in a variety of ways without screen graphics. A review and cost information can be found in the BAMDUA NEWSLETTER, V.3, #6, JUNE 1965, p. 12-18. See also highly favorable review by Bruce Gale in Profiles, April 1985, p. 72.

STATUS REPORT: One group purchase (minimum, 4 orders) has been made; am collecting orders again for another.

6. POOR PERSON'S SPOOLER

SPOOLER, made by Poor Person Software in Palo Alto, prints spooled disk files and simultaneously captures printer output from programs. It does not interfere with running programs. Compatible with Write-Hand-Man. See review and details for group discount rates in last issue, BAMDUA Newsletter, V. 3, #9, Oct. 1985.

STATUS REPORT: Two orders received; still open.

7. WRITE-HAND-MAN

WRITE-HAND-MAN, made by Poor Person Software, can be considered the "sidekick" for CP/M. You can make notes, look up telephone numbers or files on disk, and perform calculator functions by opening up a "window" while you are running your program; when you leave Write-Hand-Man, you return to your application program. See the last issue of the Newsletter for a review of the program and details of the special group purchase rates.

STATUS REPORT: Five orders received, qualifying for group rate. I will start a new order, so write ASAP, enclose SASE.

(NOTE: All the above specials can be acquired by contacting me and including information about your system, printer, etc. Give your name and address and telephone number; enclose a SASE. Contact: Georgia Babladelis, Editor, 1064 Sterling Avenue, Berkeley, CA. 94708. All the specials following include information about the appropriate person and/or address to contact).

8. PROPORTIONAL STAR

PROPORTIONAL STAR, created by Writing Consultants, is the software version of their popular book detailing how to patch WS in order to accomplish proportional printing. The patches are now available on disk with simple instructions for installing for your system and version of WS. See review, this issue of the Newsletter. A 20% discount on the $75 price is available to persons who mention they are BAMDUA members and ask for the discount when ordering directly from the company.

9. CHECKS & BALANCES

CHECKS & BALANCES is being made available to our members at a 15% discount. It retails at $74 (plus CA tax and shipping); members can have it for $71 (plus CA tax and shipping). Send your check or money order to VALCON, 1260 Westwood St., Redwood City, CA 94061. Specify your machine type and disk format. (See BAMDUA Newsletter, June, 1985, V.3, #6, p. 9 for a description of the program).

10. UNIFORM

An upgrade of UNIFORM (version 3) is available for hard disks, as well as for the MD2 and MD3. See information in prior issues of BAMDUA Newsletter. Contact Gene Korte, 415/525-8944.

11. REACHOUT

REACHOUT, a menu-driven telecommunications program that works with any modem, including the CTS MM-300 Modem System. A special version of ReachOut is available for all Micro-Decision computers. The price is $125.00 ($65.00 for the MM-300 version), plus 6% tax in California, shipping by UPS to a day time address included. Full end-user telephone support is provided by the manufacturer. Send $132.50 (includes tax and shipping) to Applied Computer Techniques, 21 Cottonwood Drive, San Rafael, CA 94901; 415/459-3212. ReachOut is reviewed in Morrow Owners' Review #2 & #3.

12. MAILERS

Members may combine their orders to a total quantity of 1,000 or more mailers (for floppies) for a special price of $.45 each and we will pay the shipping and handling charges on a single order shipped to one address. BULLDOG CONAINER CO., Glen Haven Rd., Soquel, CA. 95073.

NOTE: We need a BAMDUA member to volunteer to coordinate the order and be the recipient address for it! How about it out there?

13. MASTERCOM

MASTERCOM is produced by Software Store of Marquette, Michigan, this is a full feature, easy to use smart terminal and file transfer utility that is available for most popular computers with CP/M-80 or PC-DOS compatible operating systems. MasterCom retails for $49 but is available to our members at a discount for group purchases: 50% discount for 4 units; 60% for 25 units; and 70% for 50 units. These are real savings! This software was described more fully in BAMDUA Newsletter, V.3, #8, Sept. 1985, p. 19.

We need a Bamdua volunteer to coordinate this deal for our members. Call me (editor) or the BAMDUA office if you are willing.

SOFTWARE REVIEW: (UPDATE): ELECTRA-FIND

Software: **Electra-Find**, V.3.0 ($65; special discount available)
O'Neill Software, 415/398-2255
P.O. Box 26111, San Francisco, CA 94126
Reference: See review, Bamdua Newsletter, V.3, #8, Sept. 1985

This is a brief update on a very useful program reviewed more fully in our September issue. At that time I reported that an updated version would soon be available that corrected a shortcoming in the original version; i.e., the inability to do boolean searches.

Version 3.0 is a response to that shortcoming. Boolean searches are now possible. You can search for a combination of items and your list of items can be up to 40 lines. You can set up various combinations (e.g., and, or, not) using the appropriate symbols for the search to be performed (no symbol for "or" is necessary since it is a default option). As is the case for all types of searches with **Electra-Find**, you are not limited to searching for words only; you can retrieve non-indented headings, functions in program lines, data items, etc.

There is one minor drawback, in my opinion. In order to do a boolean search, you must first create a list of items with their operators, using your word processor. For example, if you want to search your file of business letters for references to sales or profits but not losses, you create a file:

sales
profits
!losses

If you want to find sales associated with profits, then your list is: sales
&profits

This list, then, is saved on disk and is your "search list" which is what you use to perform a boolean search. I would have preferred to enter the items in boolean notation at the "search for" request in the menu and to change the combinations at will rather than having to create new lists. But, as I said, that is really a minor complaint.

Additional improvements in this latest version include being able to run **Electra-Find** from the CP/M prompt rather than going through the menu. That makes it very fast to initiate a search; however, I must add that the menu process is very speedy also. When you operate from the CP/M prompt, you can do a boolean search automatically if you have established a search list.

I think this is a superb program and its creator, Dennis O'Neill is very responsive to user input and suggestions. He even rewards good ideas that are used! Bamdua members are reminded that they qualify for a discount coupon on the price of this program. The coupon offer expires Dec. 31, 1985.

SOFTWARE REVIEW: PROPORTIONAL STAR

by Georgia Babladelis

Product: ProportionalStar (Proportional Spacing on WordStar)
Company: Writing Consultants
300 Main Street, Techniplex Center
Rochester, NY 14445 (tel.:716/377-0130)
Price: $75 (see special deals for BAMDUA members)

Those of you who have been members for some time are aware that there has been a great deal of interest in achieving proportional spacing with WordStar. If you browse past issues of the Newsletter you will find a great deal of information about proportional spacing using WordStar's undocumented capability. Most of that information is based on a book (manual) by Writing Consultants called Proportional Spacing on Wordstar, which sells for $22.50 (including shipping). I urge you to read those articles for general background informatation if you are interested in proportional spacing. See in particular Bamdua Newsletters, V.2, #11, Dec. 1984 and V.3, #7, July 1985.

Writing Consultants now has software that can be used to accomplish the patching of proportional spacing tables described in the original manual. Rather than doing your own "patch from scratch" you now can use the program called **ProportionalStar** and answer a series of questions. At the end you will have patched your WS for proportional spacing. Here is what happens:

First you are asked what version of WS you have. It is important to know that and to answer correctly, since the patch areas for versions 3.0 and 3.3 differ. In order for the program to patch the appropriate areas in your WS, it must know which version you are patching.

Second you are asked if you wish to make a complete installation or some specific installations. When first starting out you opt to make a complete installation. After that, this handy menu of 7 choices allows you to make very quickly any other changes that you wish in order to modify the patches in accord with other changes you make. For example, if you change the printer and print wheels you use, then you can rapidly install new patches for proportional spacing. Or, suppose you do not like the spacing between words that occurs with the original patch; you may easily change that aspect. You can afford to experiment because these modifications are simple to make, quick to do, and you do not have to abandon what you are working on in order to try out different patches. Moreover, if you decide you liked the original PS Table and want to get back to that after all the changes you experimented with, then you simply choose the option that will restore the original PS distribution table. This is **ProportionalStar's** main menu and it looks like this:

PS Installation Selection Menu

1. Complete Installation
2. PS Table Installation Only
3. User Command Patches Only
4. Modify Spacing Between Words
5. Display HEX to ASCII Conversion Table
6. Print HEX to ASCII Conversion Table
7. Restore Original PS Distribution Table
8. Exit Program

Enter Choice =

The third menu asks you to choose which printer element is to be installed, with a range of printer elements to chose from as well as a choice for user defined elements. This is handy for experimenting with new printwheel tables without losing the table you've already installed.

Fourth, having made the choices above, you can choose to install the table provided without viewing it or you can ask to see the table in order to modify it before instaling. It is recommended that you install without viewing for a first time installation. Later, if you want to make modifications, you will want to view the table.

A brief message informs you that the PS print wheel table is now being installed and asks you to wait. Installation is quick and a message appears telling you that the installation is now complete.

Fifth, there is a menu from which you select your printer if you wish to change any of the user commands. For example, WS makes available to users the following: ^E, ^R, ^Q, ^W which are patched in this program but which you can modify. In **ProportionalStar** the ^E is used to perform backward rolls on the printer in order to print multiple columns.

That describes the process. It is simple and fast. Voilà, your WS is now ready for proportionally spaced printing. I printed the test document provided plus a number of other files to test it. First I used my normal courier wheel to see what it looked like. It gave me "nearly" proportional spacing, a nice appearance and an improved one, but not acceptable as true proportional spacing. I did not like the crowded words some of which seemed to run together, so I changed the spacing between words (quick and easy to do) but was not satisfied with the total appearance because the letters within words were too crowded in order to give more space between words. After playing around with that, I returned everything to the original tables and used a proportional spacing print wheel, the Modern PS.

Of course, proportional spacing requires an appropriate wheel and that is what you should use. On the MP200 you must change DIP switches 1-1 and 1-2 to ON so the printer can read the new wheel. (The spoke logics of the Modern PS prinwheel are different from normal printwheels; if you do not turn on the switches your printer will not be able to interpret the spokes and you will get gibberish). The switches are easy to change and are in the front of the printer, right hand set. Turn off printer, lift cover, locate the swiches and turn them on.

To use the program, you use WS as usual but enter a few commands at the beginning of your document: ^PP will activate the proportional spacing table that you have patched into your WS program; ^PA will give you alternate pitch for a nicer look; .cw9 will set a nice appearing character width (you may wish to experiment with this to suit yourself). Print the document out from WS as usual.

As others before me have explained, the less than perfectly spaced product is why this capacity was never documented in WS. The WS program provides for right justification through microjustification of spacing in a line of text. To accomplish that, characters are counted and distributed throughout the line. As you know, some characters are "fat" and some are "skinny" so merely counting them and spreading them out fails to do justice to the physical space required by each. What the creators of this software have done is find a way to finesse WS into providing some differential spacing closely approximating proportional spacing. The original manual provides information for additional finessing by the user, so that you can improve the printout for your needs.

The print out looks very nice indeed. If I had not had some experience with other proportional spacing software, I would have been thrilled with this product. As it is, I am "fussy." There is still some crowding of letters within words, especially if the word contains a couple of wide character letters. Most words look great, but a word such as "dummy" looks cramped. This less than perfect output is not terribly obvious, so if you are not in need of the perfect typeset look, this program is great, a snap to install, and very easy to use. You are provided with several solutions for adjusting the amount of space a character takes up and you can experiment at will to achieve the look you like. You will feel rewarded by the improved appearance of your printed materials.

The program retails for $75 but is available to Bamdua members for a 20% discount. The president of the company, Mike Weiner, very graciously made things very easy for all of us (especially me!) by making it simple to get the discount on your purchase. All you need to do is mention you are a member of BAMDUA and request the 20% discount and they will honor it!

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INSTALLING DOUBLE SIDED DRIVES ON THE MD2

(c)1985 by Victor Chan

I'm sure there are a few MD2 owners out there with the old Single-sided Shugarts hankering for the convinence of the newer Double-sided drives which one can easily find at bargain prices. The number of floppy disks seem to grow exponentially when only one side can be used at a time. Those "flippy's" are too much trouble and the dirt, dust, and etc. trapped by disk rotating in one direction can be dislodged when the disk is "flipped" over and spun in the opposite direction.

Well tight budgeted sport fans, this article is going to make your day! You can now replace those old Shugarts with the slimmer half-height, double-sided drives, and all for less than an afternoon's work and about $175, depending on where and which double-sided drives you use.

On my system two TEAC's cost me $77.00 each, cables were another $18.00 and the mounting bracket was $3.00 so the total bill, excluding labor, came to $175.00.

Brief Overview:

These instructions will tell you step-by-step how to install double sided disk drives on the old Morrow MD2. The particular drive described in this article is the TEAC FD55-BV which are half-height, low power, Very quiet (the V in BV), 5 1/4 " drives. These were obtained at a bargain price of $77 each during the September 1985 3rd Personal Computer Show in San Francisco.

You may want to refer to two previous articles in the Morrow Owner's Review, Vol 1, #1, which detailed the addition of two single-sided Shugart drives C: and D:, and Vol 2, #1, which gave details of adding Double-sided Quad Density drives. This article will describe, with a brief explanation, the replacement of Single-sided Shugart drives with Double-sided TEAC drives.

Along with the mounting brackets for the TEAC, you will need two sets of drive cables, one 18" for drive B: and the other 12" for the reused Shugart drive C:, and a "Y" power cable connector. The final and actual configuration of the MD2 will be the two half-height double-sided TEACs (drives A: and B:) and one of the old 2/3 height Single-sided Shugarts (drive C:). This will all fit into the existing MD2 system box without need for a separate drive case and power supply. You may, of course, use the other remaining Shugart drive as the D: drive, but you will need to purchase a separate drive case and power supply. Due to the low power consumption of the new half-height TEACs, the existing MD2 power supply should handle all three drives. My system has been up and running for over a month now without any glitches or wisps of smoke from the Morrow Micro Decision (a sturdier unit couldn't be made).

Hardware Installation:

Since we will be replacing the existing drives, you will need to remove both of them (this makes for easier access to the board and cables) by unscrewing two sets of three screws found recessed on the bottom side of the Morrow. First, unplug both the power and the drive cables from each drive. Then turning the entire case on its back, remove the three screws while supporting the drive with another hand. Next, the drives must be carefully extracted along with its supporting cage from behind. The cage and drive will not slide out from the front due to the side mounting nuts. One of these drives will be reused as drive C:, the other can be save for future reinstallation as drive D:.

Now the trickiest part of the hardware portion of this work is removal of the existing B: drive cable. In the older MD2's they were "glued" to the circuit board to keep it out of the way of the spinning drive motor and belt. It is now too short to reach the soon to be installed piggy-backed TEACs. Either cut the cable out, or very carefully pry it out of the board (there goes the warranty!). Replace this cable with a slightly longer one.

Join the two TEACs together with the mounting plates and remount them on the Morrow using three 4-48 x 1/4 screws with lock washers. I reused the screws used to secure the old Shugart drives to its mounting case. It is the bracket with the red read/write indicator light mounted on the edge. A suggested location is to mount the drives on left side of the Morrow for easy reference as drives A: and B:. You will not need the drive cage used on the Shugart in this case since the two piggy-backed drives fit perfectly in the existing left slot. The right side will be reused as the drive C: space.

Connect the "Y" power cable to the TEACs and connect the tail end to the old power cable used originally for the Shugart drive A:. Connect the old A: drive cable to the upper TEAC drive and after carefully weaving the replaced and longer B: drive cable between what will be drive C:(out from under it) and the TEACs, connect this to the lower TEAC B: drive. Now one of removed Shugart drives can be reinstalled on the right side and the power cable reattached. The C: drive cable, however, must now come from the back edge plug of the Morrow and fed back into the case to the Shugart drive C:.

We are now ready for the next phase of the installation procedure. Making the necessary software adjustment to CPM.

Certain Notational Conventions:

We will now need to establish certain notational conventions to be used for what you will be typing:

1. Everything you type will be underlined.
2. <cr> means press the RETURN key.
3. ^C means hold down the control key and press C.
4. The RESET button is the button on the lower right corner of your computer (below and to the right of the disk drives).
5. Important things you should do (press RESET, press any key, etc.) will be shown in BOLD print.

Modifying CPM:

For this portion of the work, you will need two disks, one with CPM and lots of free space and one blank disk. The CPM disk will need the following .COM files: STAT, PIP, SYSGEN, FORMAT, and DDT. The rest of the disk will be used to store temporary and intermediate versions of CPM.

Begin by pressing the **RESET** button and inserting the CPM disk with only the files listed above.

Retrieve a copy of CPM from the disk's system track 0 and save it as file CPM0.COM:

```
A>SYSGEN<cr>
SYSGEN VER 2.0 MD1.0
SOURCE DRIVE NAME (OR RETURN TO SKIP) A<cr>
DESTINATION DRIVE NAME (OR RETURN TO REBOOT) <cr>
A>SAVE 48 CPM0.COM<cr>
```

Now we must reconfigure drive B: as a Double-sided drive. Changes will be made to CPM to identify B: as a Double-sided device by patching the so called Disk Parameter Block (DPB or DPBASE) and the disk definition table (MTAB).

Meanwhile drive A: must remain working as a single-sided drive since the old CPM has no idea yet that there are two double-sided drives. So we will first set up CPM to recognize drive B: as a double-sided drive then actually format a double-sided disk using the old version of CPM (your old FORMAT.COM program can already do both single-sided and double-sided formatting, but this was physically impossible with the original Shugart drives.) Once a disk is formatted, files can be transferred using PIP, and revised CPM can be written on the disk using SYSGEN.COM.

CP/M Disk Parameter Block - DPB

Referring to your Morrow CPM manual (there is actually a wealth of data there if one knows how to interpret and understand the jargon), on page 146 is a list of the names and size in number of bits of each part of the DPB:

SPT	BSH	BLM	EXM	DSM	DRM	AL0	AL1	CKS	OFF

```
16     8     8     8     16    16    8     8     16    16
```

In the file CPM0.COM the DPB is found at address 2792, but in reality it resides in the upper portion of RAM memory at address F692. Depending on your personal version of the MD2 and revision date of your CPM, the address will vary slightly. Beatty's article in MOR vol. 2 #1 describes precisely how to get at the actual address. Otherwise you may need to do some searching with CPM's DDT. The actual sequence of hex characters in the DPB of the original CPM disk is the following (starting at relative memory address 2790):

```
ADDR          |--- DPB for drive A: --->
              |
2790  DD F8 28 00 04 0F 01 C2 00 7F 00 C0 00 20 00 02
27A0  00 28 00 04 0F 01 5E 00 7F 00 C0 00 20 00 02 00
         |
         |<--- end of drive A: DPB and begin DPB for drive B:
```

Each of the five drives of the Morrow A: thru E: will have its own DPB. If all the drives are identical, they will have identical DPB values. Beatty shows how to locate the address of the DPB by executing the CPM BDOS function number 31 (hex 1F). Most Morrows will start at address 2792 hex with the value 28 hex. The values for drive B: would then start at 27A1 hex with the following bytes:

```
27A1:  28 00 04 0F 01 5E 00 7F 00 C0 00 20 00 02 00
```

These values correspond to the following DPB names:

SRT:	0028	40 decimal Sectors Per Track (note the reverse order of the High/Low bytes)
BSH:	04	Block SHift factor
BLM:	0F	BLock Mask
EXM:	01	EXtent Mask
DSM:	005E	Disk Storage Maximum (note the so called High byte 00 is actually at a lower address than the Low byte 5E)
DRM:	007F	DiRectory entries Maximum
AL0:	C0	ALlocation byte 0
AL1:	00	ALlocation byte 1
CKS:	0020	CheCK vector directory Size
OFF:	0002	OFFset system tracks

Only two of the bytes, EXM and DSM, must be changed to reflect the increased capacity of double sided floppys. For our case the revised values are:

	old	new	
EXM:	01	00	
DSM:	005E	00C2	but in reversed order!

Using DDT to make these changes,

```
A>DDT CPM0.COM<cr>
DDT VERS 2.2
NEXT   PC
3100   0100
-
```

the substitutions to make are:

```
-S27A5<cr>
27A5    01   00<cr>      [change 01 to 00]
27A6    5E   C2<cr>      [the Low byte 5E is changed to C2]
27A7    00   .<cr>       [the High byte is OK]
-
```

The next part of CPM to revise involves the redefining the physical characteristics of the disk drives.

Disk Drive Motor Table - MTAB (Morrow TABle ?)

Again Beatty's article explains how to find the address of this part of CPM. We will use as an example consistent with the DPB address the value 2818 hex.

This table reflects the physical characteristics of individual disk drives such as single or double side, single or double density, stepping motor rate, head settling time, and etc. The two TEACs mounted as drives A: and B: will need to be identified by CPM through the values kept in this table. Physical drives A:, B:, and C: and the corresponding "virtual" drives D: and E: before changes have the following hexadecimal values:

Drive:	A:	B:	C:	D:	E:
Beg. Addr.:	2818	2821	282A	2833	283C
byte 0:	01	02	04	04	01
byte 1:	D8	59	5A	5B	5D
byte 2:	58	58	58	58	58
byte 3:	05	05	05	05	05
byte 4:	6F	6F	6F	6F	6F
byte 5:	03	03	03	03	03
byte 6:	05	05	05	05	05
byte 7:	1C	1C	1C	1C	1C
byte 9:	FF	FF	FF	FF	FF

Each drive has nine bytes to describe its characteristics:

		High 7	6	5	4	3	2	1	Low 0
bit number ----->									
BYTE 0:	**DSKDEF0**	Unused		SS=0 DS=1	DS Mode		Motor Control A:,E: = 001 B: = 010 C:,D: = 100		
BYTE 1:	**DSKDEF1**	Virt. Drive = 1	SD=0 DD=1	TRKS 0=40 1=80	Sector Size 00=128 01=256 10=512 11=1024		SS=0 DS=1	Physical drive Address A:,E:=00 B:=01 C:=10 D:=11	

BYTE 2: **Motor Wait Time** in increments of 4ms.

BYTE 3: **Head Setlng Time** After seek in 4ms increments

BYTE 4: **SRT/HUT** SRT = stepping rate(6 = 20ms., D = 6ms.)
HUT = F

BYTE 5: **HLT/HD** HLT = 0
HD = 3

BYTE 6: **EOT** EOT = 05

BYTE 7: **GPL** GPL = 1C

BYTE 8: **Current Track** = FF

From the tables above the current and new values for drive B:

Name	Address (hex)	Old Hex Value	Old Binary Value	New Binary Value	New Hex Value
DSKDEF0	2821	02	0000 0010	**0010 0010**	**22**
DSKDEF1	2822	59	0101 1001	**0101 1101**	**5D**
MtrWait	2823	58	0101 1000	no change	
HD stln	2824	05	0000 0101	no change	
SRT/HUT	2825	6F	0110 1111	**1101 1111**	**DF**
HLT/HD	2826	03	0000 0011	no change	
EOT	2827	05	0000 0101	no change	
GPL	2828	1C	0001 1100	no change	
CrntTrk	2829	FF	1111 1111	no change	

Note that bit 5 of DSKDEF0 and bit 2 of DSKDEF1 changed from 0 to 1 to let CPM know that the physical drive B: is double-sided. Also the first "nibble" of BYTE 4 has been changed from a "6" to a "D" to set the motor stepping rate to 6ms. Previous articles in the MOR Dave Block Q & A column made this change to "quiet" down the "buzz" from the stepping motor of the MD3's.

Resuming where we left off in DDT when we changed the DPB, we now effect these changes in the MTAB:

```
-S2821<cr>
2821    02   22<cr>      [Change the DSKDEF0 byte 0]
2822    59   5D<cr>      [Change the DSKDEF1 byte 1]
2823    58   <cr>        [     No change            ]
2824    05   <cr>        [     No change            ]
2825    6F   DF<cr>      [Change the step rate SRT nibble]
2826    03   .<cr>       [  No more changes         ]
-^C                      [Exit DDT]

A>SAVE 48 CPM1.COM<cr>   [Save the revised CPM]
```

This new version must now replace the old CPM residing on tracks 0 and 1 of the single sided disk in drive A:

```
A>CPM1.COM<cr>           [execute CPM1 i.e. SYSGEN]
SYSGEN VER 2.0 MD1.0
SOURCE ...<cr>           [source is the program itself
DESTINATION ... A<cr>    put onto tracks 0 and 1 of disk A:]
<cr>
```

Next do a "cold" boot by pressing the **RESET** button and the return key. Run the FORMAT program designating drive B. A new message should now appear requesting either a Single-sided or Double-sided format. Enter D for double-sided and place a blank disk in drive B: before pressing the return key. Formatting should proceed as before except the number of tracks being formatted should extend past the usual 39 to 79. Verification should also be made on all 80 tracks 0 - 79. Confirm the disk characteristics in drive B: by executing the STAT B:DSK: command.

As a check run the PIP command and copy all the files in the single-sided drive A: to the double-sided drive B:. These excercises serve to check on the changes made to CPM and that drive B: can physically format double-sided disks. Run DIR and STAT *.* from both drives A: and B: as a further check on both the revised CPM and drive B: files.

Drive A: configuration

Adjustment of CPM to recognize drive A: as double-sided will be similar to the B: drive excercise. The virtual E: will also be set up but more importantly is adjustment to the BOOT program which looks at the disk in drive A:. Before reading either the DPB or the MTAB the BOOT program loads the CPM system into memory and must know that the drive is double-sided before it can retrieve the rest of the system track data.

First make the adjustment to DPB and MTAB for drive A: and E:. The addresses, old values and new values of the DPB are:

DBP

drive A:			drive E:		
Addr (hex)	old value	new value	Addr (hex)	old value	new value
2792	28	28	27D2	28	28
2793	00	00	27D3	00	00
2794	04	04	27D4	04	04
2795	0F	0F	27D5	0F	0F
2796	01	00	27D6	01	00
2797	5E	C2	27D7	5E	C2
2798	00	00	27D8	00	00

The corresponding MTAB addresses, old and new values:

MTAB

drive A:			drive E:		
Addr (hex)	old value	new value	Addr (hex)	old value	new value
2818	01	21	283C	01	21
2819	D8	DC	283D	D8	DC
281A	58	58	283E	58	58
281B	05	05	283F	05	05
281C	6F	DF	2840	6F	DF
281D	03	03	2841	03	03

Finally change the BOOT record table (BTAB):

Addr (hex)	old value	new value
0980	01	21
0981	D8	DC
0982	58	58
0983	05	05
0984	6F	DF
0985	03	03

After making these final changes using DDT's (S)ubstitute command, save the file as the final form:

A>SAVE 48 CPM2.COM<cr>

Make the final transfer to drive B: system tracks by running the CPM2.COM (SYSGEN) program:

A>CPM2.COM<cr>
SYSGEN VER 2.0 MD1.0
SOURCE DRIVE NAME (OR RETURN TO SKIP) <cr>
DESTINATION DRIVE NAME (OR RETURN TO REBOOT) B<cr>
<cr>

Now the CPM version with adjustments to recognize your newly installed double-sided drives are on the disk in drive B:. Check the status (STAT) and copy the files onto B: from A: (PIP). Go over to the B: drive and run the same programs (DIR, STAT, and PIP). Barring any glitches in the hardware and the newly revised CPM, we next replace the disk in drive A: with the disk now residing in drive B:.

Push the RESET button, and press return. You should now have a fully configured MD2 with two double-sided drives and one single sided drive. The setup for drive C: will have been accomplished through the original distribution disk with a bunch of INIT files designating the existance of three drive.

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(From the CP/Morrow Computer Group Newsletter (Sacramento), Aug. 1985, V.2, #8, p.3-7)

RE-INVENTING YOUR MORROW MICRO DECISION

PART I: SIMPLE, INEXPENSIVE ENHANCEMENTS

by Phil Hess

First, lets identify some general areas where we might like to see some improvement in our Micro Decisions. Of course, there's the problem of early Morrow terminals with their inoperable function keys and limited video attributes. And then there are early Micro Decisions which lack a parallel port, as well as all the MD2's which have only single-sided drives. Another area might be the CP/M operating system itself, which seems particularly "dumb" some days. Then there is the system unit, containing the actual computer, were we find no real-time clock, no expansion slots, no way of adding additional hardware. And lastly there's the area of software, or more specifically the inability to run a lot of the popular programs available these days for most 16-bit systems.

Rather than exhaustively treating these areas in this first article I will try to present at least one modification you can make right now, without any expense, as well as a few that will require modest out-of-pocket expense. I'll reserve the discussion of more complicated enhancements for later articles.

Increasing the terminal's speed: Most Micro Decisions came with terminals which were pre-installed to operate at 9600 baud, but which can easily be speeded up to 19,200 baud simply by flipping a switch on the back or by pressing the SETUP key on the keyboard and tapping a few keys.

However, in order to take advantage of this increased terminal speed, the computer's terminal port must also operate at 19,200 baud. Unfortunately, Micro Decisions with revision 2 boards are unable to operate the terminal port faster than 9600 baud, apparently because of a design oversight. Micro Decisions with revision 1 boards and hard disk Micro Decisions can operate the terminal port at 19,200 baud.

If you have a revision 2 Micro Decision, run the SETUP program and try increasing the terminal baud rate using option A. You should see that the maximum rate is 9600 baud. With hard disk Micro Decisions, option A of the SETUP program allows you to increase the terminal port speed to 19,200 baud. Once this is done, select the option which makes the change permanent. Your system will now be temporarily inoperable since the terminal is still operating at 9600 baud, so set the swiches on the back of the terminal to change its operating speed to 19,200 baud. With the MT70 terminal you need only to flip switch 1 to ON. The switches should look like this:

ON ON ON OFF ON ON ON OFF

With other terminals, such as the MT60, consult the terminal manual.

With the hard disk systems, once the port speed and the terminal speed have been increased, try booting the system. Note that the first lines of the log-on message displayed each time the system is reset will appear garbled since the bootstrap loader assumes that the terminal is operating at 9600 baud. However, as soon as the CP/M system itself is read in from the disk and executed, it will change the terminal port to 19,200 baud and normal operation resumes, only at a much faster display speed.

The rest of this section applies only to early MDs with revision 1 boards. (This will require opening up the system with a Philips-head screwdriver and flipping two tiny switches).

First unplug the power cord and disconnect all cables from the system unit. Then set the unit gently on its front (drives facing down). Remove the two screws in the corners on the back of the unit. Then remove the two screws on each side of the cover where it folds under the system unit. Don't lose these six screws or their washers. Set the unit gently back onto its base.

Slide the cover off about halfway. It may not slide easily and you may have to push it from the back, holding the unit steady by pressing against the vents on the front. Peer inside. In the corner opposite where the power cord enters you should see two small sets of eight switches, called "paddles." Look at the set labeled "1ST BAUD RATE." If your terminal's baud rate was 9600 (the factory setting), you will see that paddle 2 of this set is ON, while paddles 1 and 3-8 are OFF. To speed up the computer's terminal port to 19,200, turn paddle 2 OFF and turn paddle 1 ON. Now slide the cover back on, but hold off on the screws until you have checked to see you got the paddles set correctly.

Hook up your terminal cable again by connecting it to the RS-232 (not the AUX) port on the back of the terminal and rightmost port on the back of the system unit (as you face the back). Plug in th power cord and turn on the computer. Turn on the terminal and change its baud rate to 19,200 as follows:

On early terminals, such as the MT20 (alias Lear-Siegler ADM20) which might not have come with a manual, press the SETUP key to go into the terminal set up mode. You should see the terminal's bad rate displayed, probably 9600. Move the cursor as far to the right as it will go using the right-arrow key. Now tap the up-arrow key a couple of times. The indiated baud rate should change. Continue pressing the up-arrow key until the baud rate reaches 19,200, then press the SAVE keyto store the new baud rate. (If you have a different terminal, follow the instructions in the manual for increasing its baud rate).

Make sure you have a system disk in drive A and reset your system. Your system should boot. If garbage or nothing appears on the screen, check the following:

- Is paddle 1 on the first set of switches set to ON and paddles 2-8 set to OFF?
- Is the keyboard plugged in?
- Is the terminal properlyconnected to the system unit via the correct serial port?
- Is the terminal set to 19,200 baud?
- Is there a system disk in drive A?

To see how much faster your terminal operates, enter DIR, which should spit the file names up on the screen almost instantaneously. Similarly, programs such as WordStar and NewWord should rewrite and change the contents of the screen much faster.

The other set of paddles (2ND BAUD RATE) inside the revision 1 MD controls the baud rate of the serial printer port. However, changing these settings will not increase the performance of your printer since the factory installed transmission speed (1200 baud, or about 120 characters per second) is faster than most printers can print (usually 20 to 80 characters per second). Increasing the printer port's baud rate normally is useful only with printer buffers.

Inexpensive operating system enhancements

If you were able to double your terminal's baud rate, no doubt you've alredy noticed how fast your terminal now displays lines of text. Try displaying a large document or ASCII data file using the CP/M TYPE command. With CP/M 2.2, the lines of the file scroll up so fast that you almost don't have time to press ^S to freeze the display. With CP/M 3.0 on a hard disk MD, TYPE pauses automatically once the screen is full and waits for you to press a key to continue. This is just one of the many advantages that CP/M 3.0 has over CP/M 2.2. There is a way you can add this and several other useful features to CP/M 2.2 easily and cheaply. But first a few words about CP/M 2.2.

With CP/M, commands that you enter are of two types: transient and built-in. Examples of transient commands are STAT, PIP, EDIT, SYSGEN, and FORMAT. These are actually small programs which reside on the disk until you need them. Examples of built-in commands are DIR, TYPE, REN, ERA, and USER. There are no DIR.COM and TYPE.COM disk files with CP/M 2.2. Rather, these commands are a part of the operating system in memory.

The advantage of transient commands is that they don't take up memory, only disk space (unless you remove them). Also, transient commands can be run from programs such as WordStar and NewWord. The disadvantage of transient commands is that if they are not on the disk you cannot use them.

The advantages of built-in commands are that they are always there if you need them and they generally execute faster since they do not have to be loaded into memory from the disk. Anytime you see th A or B prompt, you can enter DIR or TYPE or any of the built-in

commands. However, to minimize the amount of memory they take up, these built-in commands are very crude. For example, DIR only lists the names of the files on a disk, unsorted, with no other information about them.

The part of CP/M which displays the A prompt, loads the programs you run, and contains all of the built-in commands, is called the Concole Command Processor, or CCP for short. If you enter PIP in response to the A prompt, the CCP looks on the logged-in disk for a file disk named PIP.COM and runs it. If the CCP can't find PIP.COM, it says "PIP?", even though PIP.COM might be on the disk in the other drive. The CCP is not very smart, despite its big name.

The CCP resides on each system disk (along with the rest of CP/M, as well as the program that loads the CCP and CP/M each time you reset your system), but on a part of the disk you never see and rarely care about. The part of a disk containing CP/M is called the "system tracks." These are reserved tracks on the disk set aside during formatting, even if you don't intend to make the disk a system disk. CP/M is there on each system disk, but you can't see it, only evidence that it's present in the form of the CCP's A prompt waiting for you to enter a command or run a program.

Since the CCP is actually a program which resides on the disk (invisible and inaccessible to most of us), it can be replaced. Several CCP replacements have been developed over the years in an attempt to make the CCP more powerful or to correct what were seen as deficiencies in the original CCP. One of the most popular CCP replacements is called ZCPR, billed as a "Z-80 replacement for the CP/M CCP."

The first version, ZCPR 1, is in the public domain. Sometimes the quality and documentation vary, making it difficult to install. One way Morrow owners can avoid the headaches of installation is to obtain ZCPR from a reputable source. One such source is Micro Cornucopia. For $12, which includes postage, they will rush you a ZCPR (disk M9) that self-installs on your Morrow (Micro Cornucopia, P.O. Box 223, Bend, Oregon 97709). With that, all you need to do is take a sysem disk that contains the CP/M transient programs, SYSGEN.COM and DDT.COM and copy to it three files from disk M9, namely EX14.COM, INSTALL.SUB, and ZCPR.HEX.

To install, simply boot this system disk and type EX14 INSTALL. EX14 is similar to the CP/M SUBMIT command, only more powerful, and executes the commands in the INSTALL.SUB file. These commands copy ZCPR (contained in ZCPR.HEX) on top of the system tracks containing the CCP, effectively replacing it. SYSGEN then can be used as usual to move ZCPR to other system disks.

Now boot the system again and try out the ZCPR TYPE command with a document or text file. TYPE now pauses once the screen is full and waits for you to press a key to continue. ZCPR adds some other nice features to CP/M 2.2: The ERA command has been improved,

listing out the names of any files deleted. The DIR command can now be used to show system files as well as non-system files (previously STAT was required to show system fils).

Some of ZCPR's little improvements are nice too. For example, with the CCP that came with CP/M 2.2, to log onto another disk you had to enter the disk name followed by a colon (e.g., B:). If you made a mistake and got B; instead, you got a "B;?" error message. With ZCPR, CP/M takes this into account and allows you to enter either B: or B; to log onto drive B. Also, a new command, LIST, can be used to send a text file to the printer.

Perhaps ZCPR's biggest improvement, though, is its ability to load and execute programs more intelligently. Now if you enter PIP when logged onto disk B and PIP.COM is on disk A, ZCPR will locate it and load it. Similarly, if you are logged into a different user area, ZCPR will look for PIP.COM in user area 0. This allows you to use other user areas of a disk to logically separate your files without worrying about where your utility programs are. Unfortunately, WordStar doesn't appear to have been written with user areas in mind and can't find its overlay files if run from another user area. NewWord can be run from any user area and knows enough to look in user area 0 if it can't find its overlay files in the logged-in user area.

ZCPR also keeps you informed about what user area you are logged into by displaying the user number along with the logged-in drive name in the system prompt. Documentation for ZCPR is provided on the disk in the form of two fils, ZCPR.DOC and ZCPR.MAN. The first is a sort document supplied by Micro Cornucopia describing how to install ZCPR. The second is a longer (21 pages) technical document written by ZCPR's developers. Both files are WordStar compatible and can be printed using WordStar or NewWord. ZCPR.DOC can also be printed using the new LIST command. However, if you try to use LIST to print ZCPR.MAN, the high bits on certain characters will probably drive your printer crazy. One final note: ZCPR is completely compatible with your programs since you don't replace the part of CP/M that your programs use, only the part that you use.

ZCPR was written for CP/M 2.2 and should not be installed on the hard disk MD5 and MD11 systems that have CP/M 3.0 (which already provides features comparable to those added by ZCPR).

With ZCPR on disk M9 is D.COM, which provides a sorted listing of the file directory, including file sizes and the space left on the disk. Another enhancement you can make is to subscribe to the Morrow Owners' Review which costs $18/year and will provide you with reviews, articles and ads for Morrow products. In summary, for $30 (zero to change terminal speed, $12 for disk M9, and $18 for a subscription to MOR) you can speed up your terminal, significantly improve the CP/M 2.2, and receive a rich source of Morrow specific information.

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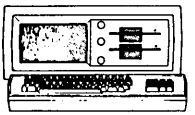

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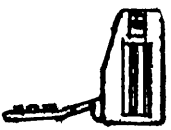

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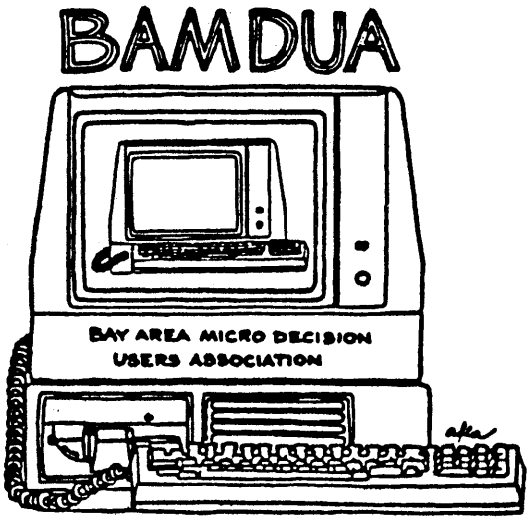
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