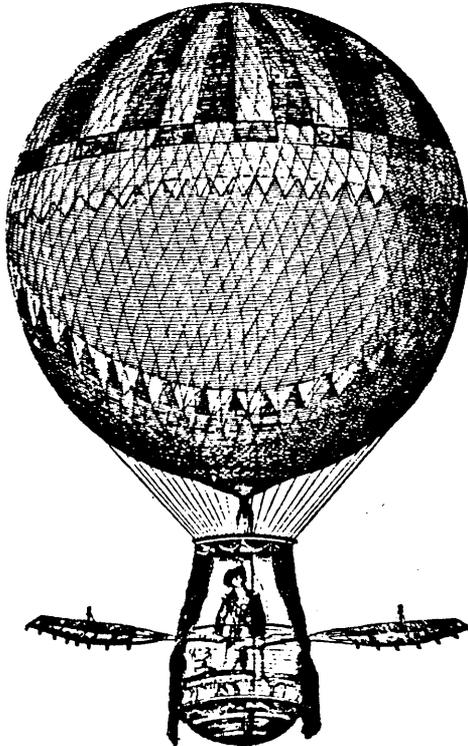


BAMDUWA BAKUP News

Bay Area Micro Decision Users Association • Bay Area Kaypro Users and Programmers



Blimps,
Spreadsheets
and Other
Things

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BAMDUA-BAKUP NEWS is published bimonthly by **Bay Area Micro Decision Users Assn.** in cooperation with **Bay Area Kaypro Users & Programmers**, both Cal. non-profit corps., for their members. Membership fee to join, renew, or extend is \$20/yr-BAMDUA, \$20/yr-BAKUP. Both organizations founded in early 1980's to support users of Morrow MD & Kaypro CP/M computers, respectively. Both now have many users of other systems including MS-DOS. Both maintain libraries of CP/M-compatible public domain software & 24 hr. remote bulletin board systems. For information, send self-addressed stamped envelope to mail address. For BBS registration see online bulletin. Since ceasing publication, **Morrow Owners Review (MOR)** provides some material for publication, & to fulfill outstanding subscriptions, it purchases & separately mails copies of each issue, also continuing its own BBS.

USER GROUP MAIL ADDRESSES

BAMDUA	BAKUP
P.O. Box 5152	P.O. Box 8537
Berkeley, CA 94705	Berkeley CA 94620
415-654-3882 BBS	415-849-9389 BBS
534-4257 voice	
answer machine	

PUBLIC MEETINGS

Albany Senior Center
 846 Masonic Avenue
 Albany, CA
3d Tues. each month
7:30 pm - near
corner Solano Av.

BAMDUA OFFICERS

President	Peter Campbell
Treasurer	Robert Dupuy
Secretary	George Borys
Programs	Rick Charnes
Newsletter	Ilbert Butler
Library	Gene Korte
At Large	Sypko Andraea, Georgia Babladelis, Ron Jacobs, Wesley Jonnson

BAKUP OFFICERS

President	Robert D. Athey, Jr.
Treasurer	Robert Dupuy
Secretary & Programs	Dave Bortin
Newsletter	Frederick Winyard
At Large	Dwight Chew, James Ulley

BAMDUA PBBS/RCPM (& similar MOR PBBS/RCPM)

Phones:	(415) 654-3882 BAMDUA	Sysops: Steven Wartofsky
	654-3798 MOR	Sypko Andraea
Baud:	300/1200/2400	Free: BAMDUA & BAKUP
Hardware:	Morrow MD Hard Disk - CP/M 3.0 - 2 X 22 Mg	
Software:	PBBS, BYE, KMD, ZFILE, LUX, MAP, also PRACSA Member	

BAKUP BBS/RCPM

Phone:	(415) 849-9389	Sysop: Woody McPheeters
Baud:	300/1200	Free: BAMDUA & BAKUP
Hardware:	Kaypro 10 - CP/M 2.2 - 11 Mg	
Software:	PICS (Pascal Integrated Communications System)	

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Did you ever wonder why I call myself a computerist? It implies that I am not a guru in software or hardware, but am just a user. As I've said before, I am only an experienced novice. My mind is too cluttered with the chemistry of paints, rubber, adhesives and plastics to go off in a completely different tangent to learn electronics or the niceties of programming. For those who have the time, energy, enthusiasm and interest to learn those things, my hat's off, and I want to know who you are so I can extend my network of reference persons. Indeed, one of the ways I help the world at large is to remember someone useful for answering a question I can't answer.

My consulting work started many years before I started my business. I was at Mellon Institute running a small group of contract researchers, and doing some research and writing myself. About 10 years ago, I was called into a group think tank operation on a temporary basis for my paint practical know-how, and got onto their "brainbank" list. It turns out there are several small businesses that do nothing but gather such "brainbank" people together to attack a problem for an un-named client. The operators of those small businesses call their reference persons "garbage can minds," but my wife tells me "Magpie minds" would be a better term. The "brainbank" people may get one or two calls a year to come to a session of 3 to 7 hours of chat with 6 to 12 other "brainbank" people, just to throw all possible solutions to the problem at hand onto the table. In a group like that, the best ideas come from the conversation, where to people's ideas can be dovetailed or combined to become even better.

Now, we're not talking large money for these operations. However, they do pay from \$150 to \$500 per session, plus your expenses. Their payment for my flights adds to the Mileage Plus program, and I figure each trip adds \$70 to \$100 to the program award values I build up -- a nice bonus. BUT... that's not the real value. Those "brainbank" people are interesting, and great reference persons. I meet them at technical meetings (a paint or paper chemists gathering), and we rekindle the flame of friendship. What better way to meet people than in a milieu where all are dealing from their strengths?

I liken that kind of positive activity to what we see in the user groups interactions, too. For instance, Ken Fowler explained why all serial cables and ports are not created equal at our last meeting, and why software cannot make the adjustment between the two major types. It's in the wiring, and is a consequence of the standards that existed before computers. And even the non-techy like me can offer help to another. Ilbert Butler is planning a trip overseas in a few months, and asked about current conversion kits. I know nothing of such things, but marked two ads I saw recently to tell him about when next I see him. Magpie mind?



Last week, I spent my time in the hot humid tropic sun of Hawaii. Most of the time, I snorkled through a reef I hadn't completely explored, so I could find new things. I did, too, a moray eel, a turtle, pipe fish, needle fish and a crown fish, among others. I spent the nootest part of the days writing on my laptop -- four articles and part of a book chapter. All that was easy, so my real chore was to learn board sailing or wind surfing, however you choose to say it.

Windsurfing's haruer than it looks, but not from the stand-points that you might think. Yes, it is physical and requires some strength, BUT you can imagine a linebacker type like me can handle that. BUT... there are technique, balance and coordination requirements, too. As I spent three days early last week climbing on, standing up, pulling up the sail, and falling off or getting blown off or being bounced off by a wave, I consoled myself that it's like all those things I learned while I was young. Riding a bicycle, wrestling, canoeing while standing up, even swimming the more difficult strokes, and all they take is practice until it FEELS right. I took the lessons with other people (you fall off three times, then you rest while they fall of three times), and each quit after the session. But my mother tells me I'm stubborn, though I prefer to call myself perseverent.

The fourth day was beautiful, a little less surf and a little lighter breeze. I had access to a beginner's board (larger board, smaller sail). The teaching lifeguard watched me hop on, get the sail up and sail off about 50 yards, and he was yelling nis surprise from the time I was 10 yards away. I fell off, looked back at him on the beach, and popped back on for another 50 yard sail. I fell off, looked back, and he was coming in a kayak yelling encouragement. My feet were cramping, as I was trying to dig my toes in to hold on. I popped up on the board again, and off we went for 100 yards to fall off again. I got right back on, and told the lifeguard my feet had finally relaxed, and off we went. It all felt right!

I look back on those runs, falling off only in turns by the end of the lesson, and think back 5 1/2 years to the struggles to get the KayPro II to do book chapters, proposals, reports, magazine articles, checkbook balancing and the business income/expense records. The real key to becoming a computerist was sitting at the keyboard and banging on keys, calling reference persons when I was stuck and the manual spoke gibberish. As Paul Hornung used to say in the commercial, PRACTICE, PRACTICE, PRACTICE! OK, I'm not gifted with great balance, so more practice was necessary to learn the sail board. OK, so I'm not a gifted electronixer or programmer, but the practice at the keyboard and making the correct call to the correct reference person to ask the correct question made me learn computerism WELL!

All this makes me think of all the software that's offered to me. I don't mess with it UNLESS it is instantly useful. Is that lazy? I've probably spent a man-year in the last 5 years learning the PERFECT WRITER/CALC, WORDSTAR/NEWWORD, and VP PLANNER, along with about ten good utility programs. I'm not going to spend another man-year learning the newer stuff, UNLESS it'll really do something I need done. The three things I've learned this year already are HARVARD GRAPHICS, the SABA PAGE READER,

and the VOPT series. They're simple to use - at least for me - and they do things I really want or need done. Is that lazy?

I'll admit I'm lazy. I even take afternoon naps! Well, on occasion, anyway. But, being lazy makes me learn ways to work smart, instead of working hard. Well, I hope to work smart, instead of hard, and I look for ways to help me do that. That means I take advantage of as many ways to improve efficiency as I can. That even means, call that reference person from the user group who might have an idea to help me climb onto that board a bit better, faster, easier.

BUT... no amount of instruction will do the job, as you have to actually do it to learn it. I think about that lifeguard behind me, telling me where to put my feet, to bend my knees, to pull the sail up slowly, and that's a LITTLE help. BUT I have to feel what a balanced position is, by changing positions and falling off when it doesn't feel right. That way, when I am balanced, I can suddenly relax and get on to the sailing. That means I can suddenly think up techniques to put invoices, client charge calendars, and records in a spread sheet software that was originally for balancing check books and making up income/expense statements. That means I can put together a book chapter with tabulations, figures, and endnotes for an integrated printout to be sent to the publisher, without printing a draft.

I've often thought of the computer as an "empowerment tool." That says that if you want to do something, and know your software well because you've used it a lot, you can put together any kind of file or printout you choose because you are empowered by the hardware tools, the software tools, and the experience you've gathered by sitting at the machine. Even games serve a purpose, as they get you used to the keyboard, and even give your fingers the flexibility to reach the right keys. They even toughen up your finger tips so that book chapter word processing won't bruise them.

The user group is full of chemists, lawyers, accountants, insurance men, and an occasional engineer or programmer. Each has some help for me, and I hope I help each on occasion...

I've said for at least fifteen years that the computer can be a great toy, a trap that helps you waste time, a great source of frustration, and a great tool for getting things done. I haven't changed my mind. The only thing that's changed in the 20 years I've been computerizing is that the machines are smaller, I don't have to use punch cards, and I no longer depend on the one or two computer guru engineers I work with, but I have a user group to depend on. The user group is full of chemists, lawyers, accountants, insurance men, and an occasional engineer or programmer. Each has some help for me, and I hope I help each, on occasion as well.

Turbo Pascal for CP/M Goes Off the Market

From the
MOR BBS

Borland no longer distributes Turbo Pascal for CP/M. I talked to them today to find out if CP/Mers could get it. (legally) anywhere. I was told that:

1. It is NOT in the public domain. No copying for friends.
2. Individuals who wish to can make some kind of license agreement by calling Borland and talking to their legal dept. They are not supplying it. Apparently this is a license to have and use after copying from someone else. That means, of course, no manual.

3. They are considering some other arrangement for all the orphans. What that might be they won't say at this moment. Possibilities might include permitting some small company, user group, or the like, to copy and distribute it. Or maybe something else. They promised to call me back with more information as soon as they decide what they are going to do -- I'll keep everybody informed on the MOR board, and maybe in an article for MOR-ATLANTA and BAMDUA.

4. I have the impression that they discontinued when orders became too small to warrant re-printing the manual. Possibly some distributor could get a disk file of the manual...?

So, does anyone know a distributor who would want to take this on? If so they should contact Borland.

CP/Mers should write Borland (attn: legal dept.) requesting that it not be kept off the market.

Another "natural" distributor might be TUG (Turbo User's Group).

It's not just Turbo Pascal, but also the ToolBoxes for CP/M.

Feel free to pass this message on to other CP/M related BBS's.

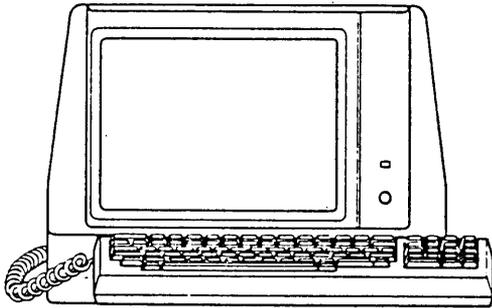
Bruce Gowens
PO. Box 8068
Emeryville, CA 94608

Third Tuesday of November

THE SMALL COMPUTER IN THE SMALL BUSINESS: The November 15th general membership meeting will have Nancy Mulvany (former BAKUP and FOGLIGHT newsletter editor) speaking on the operation of the small business with the micro computer. Her experience started with the KayPro 4, and continued to the AT&T 6300, an Osborne Vixen, and many more. She also is the US agent for MACREX, the English indexers' software, and can speak to the difficulty of being the technical support to software purchasers.

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CUT AND TAPE TO YOUR COMPUTER

MOR and DTCS: MOR's business is slowing down. Just as expected. All the SuperCalc 2 packages have been sold, there are only four OutThink packages left. While MOR's mailorder income diminishes its operating expenses stay about the same. These costs consist of phone, postage meter, post office box, business license, merchant's bank account, MC/VISA machine, and so on. It is now coming to a point where business expenses are not offset by income from orders. This was also expected. Anyway, some re-organization is in order: MOR will be officially dissolved on December 31, 1988, but you won't be left in the cold.

MOR's business will be taken over by my tiny enterprise called Dutch Treat Computer Services (DTCS). The few remaining fulfillment subscribers who receive this newsletter from MOR will next year receive it from DTCS; the MOR Bbs will stay up and running and will not even change its name; mail sent to MOR will be answered as usual through P.O. Box 5487 in Berkeley, CA 94705. You can even reach DTCS (and MOR at this point) by phone: 415/658-0152. So actually there is not much of a difference to the Morrow owner needing something. However, the postage meter and the MC/VISA machine will be dismissed at the end of 1988, and you will be asked to make your checks out to DTCS. All this will make the operation less costly.

For Sale:

One hardly-used Epson RX-100 dot matrix printer, wide carrier 132 char. per line at 10 cpi. \$200

Nearly all MOR products will still be available, especially manuals and back issues. Most of what MOR has to offer you may already have, and nobody expects you to buy it over and over again. But

if you are passing on your Morrow to someone else, tell them that MOR -- and next year DTCS -- will still be around to order useful Morrow goodies from. Tell them that anyone can find out what is available by sending MOR an SASE and a request for the MOR Product sheet and/or the complete list of FLOEs. Mail the SASE to MOR (or DTCS next year): P.O. Box 5487, Berkeley, CA 94705.

It may be useful for you to know which MOR products are currently sold out. Here is a list: #607: MD Hard Disk User's Guide; #804: ZCPK3: The Manual; #806, SuperCalc 2; #903: Mike Allen's Clock Kit (some parts still available).

In the meantime MOR has also divested itself of nearly all its surplus equipment. At first there were no takers, but during the month of August many people came to buy the MD-MD machines, the MD3s, terminals, modems, switch boxes, etc. The only thing left are a tractor feed for the MP200 (\$100), and a hardly used Epson RX-100 dot matrix printer, wide carrier 132 characters per line at 10 cpi (\$200). If you want one of these better call quick!

Some MOR products are getting a bit obsolete compared to the new stuff that is still becoming available for CP/M. For instance, if you are interested in ZCPR3, rather than getting the MOR bootable version of ZCPK3, you might first want to check out what Alpha Systems has to offer. Alpha Systems, headed by Joe Wright, is the successor to Echelon. They handle NZCOM, Z3PLUS,

ZCPR34, ZSDOS and more wonderful replacements/enhancements of our old CP/M system. If you don't know what these acronyms stand for, get a catalog from Alpha Systems Corporation, 711 Chatsworth Place, San Jose, CA 95128, (408) 297-5594.

Our Columnists: Isn't it amazing that we still have a covey of wonderful columnists to write for us about things Morrow? They have been incredibly faithful and generous. But, they feel lonely. They need to get letters from you, or they will go away, thinking that you don't like them anymore, or -- worse -- that you don't care.

Bill Steele told me that he had received a few letters, but they were all from the same person! Now there is a good try to rake a crowd! Problem is, it gets a bit one-sided that way. Still, thanks for trying so hard, whoever you are.

What we need are some more people to keep in touch with our columnists and keep them warm. Ask them anything, tell them what you would like them to write about, or what you are up to, or what has puzzled you for most of five years and you were afraid to ask.

Everything That's Fit to Print: In the last MOR-Atlanta News I noticed a distinct change in editorial policy: soapbox features. If you have anything to say -- whether it relates to computers or not -- they will likely print it. Already we have seen articles on hypnosis and on "Why I'm a Democrat," and I am left with conflicting feelings about that. Should I now write about why I am a Dutchman? Or why I choose to be born a male? But all kidding aside: does it really make sense to write about these things in a computer user newsletter? Are we running out of things to write about? Are we losing sight of what makes up our common experience as Morrow owners?

Too many BBSs in town? There is a discussion on the MOR BBS about whether two Morrow-oriented BBSs in one town is not a tad redundant.

I have noticed the same tendency on the MOR and BAMDUA BBSs. People have always chatted a lot on BBSs, which have in many ways become global villages. As in any village, people need to chat; nothing wrong with that. We have a BAMDUA co-sysop who sometimes seems to feel that the chatting lacks life, so he infuses some excitement by making wonderfully outrageous statements, mostly in the political realm. Then he lays in wait for a response. That process can be a lot of fun. But to do the same in a computer user newsletter? I don't know why, but for some reason it strikes me that this kind of bantering back and forth is more natural on a BBS than in a newsletter.

Mind you, I'm not knocking it -- I rather enjoyed the hypnosis articles -- but I'm wondering why we are going this way with our communications resources. Do we want it? Or is it born from an editor's desperation about, or fear or lack of articles?

Too Many BBSs in Town?: Slowly there is emerging a discussion on the MOR BBS about whether two Morrow-oriented BBSs in

one town is not a tad redundant. Richard Holway says: "Why not consolidate? Let MOR be the survivor and give the BAMDUA [BBS] equipment to it, to augment, replace or repair the MOR [BBS] equipment as needed... There would be little need to even compare the [downloadable] software on MOR with that on BAMDUA: what MOR doesn't have either doesn't matter or can be added later. The whole idea depends on Sypko's willingness to continue as MOR Sysop, of course."

Maybe you should know that the BAMDUA BBS doesn't really have a Sysop (System Operator) right now. When famous Sysop Steve Wartofsky moved to Chicago he left a void which was partially filled by the good efforts of Tom Kunich and George Borys, who took over as co-Sysops. But in the BBS bulletins they made it abundantly clear that there was a need for a "real" sysop, implying that they really wanted out.

So I have been thinking about a possible way to smoothly consolidate the two BBSs into one, and about my willingness to be its Sysop. For instance, would it be more work, or would it be about the same? I suspect there is a great overlap in the registered users of the two BBSs, but I have not looked at the lists lately. It takes me now between five and ten hours a week to respond to messages and do the routine maintenance. If things go wrong -- as they seldom do -- it is of course much more work.

Both BBSs are operating from out of my home, so we wouldn't have to change location and phone number. It is sometimes a bit inconvenient, but a BBS can be sysop-ed remotely, as is currently the case with the BAMDUA BBS. However, after power outages or other rare mishaps a re-boot is often needed and that we can't do remotely yet. Consolidation certainly makes some sense; traffic has been dropping off a lot on both BBSs lately. I don't really know how Tom and George feel about it, let alone what BAMDUA thinks about it. But BAMDUA? Who is BAMDUA nowadays? That is becoming increasingly unclear too.

I have also been thinking that it might be nice to build a new BBS machine with an ST225 (22mb) and an ST251 (44mb), the way Werner Gumpert has his BBS set up (CO-ED in Walnut Creek, 415/938-9470). The drive C: disks of the MOR and the BAMDUA BBS are both far too full as it stands now. Maybe get the newest PBBS or NBBS software? But what am I dreaming about? I should be doing less of this stuff, rather than more. In short: I don't know myself yet how willing I would be to do the job of consolidating the BAMDUA and MOR BBSs and sysop-ing forever after. I guess a lot would depend on how much the service is needed. How would I find out? If you have any ideas after reading this let me know. **Hello? Are you there? Is anybody there?**

Anybody there? Sounds just like the astronomers with their ever growing telescopes and hopes and expectations: Any life out there? That reminds me: I promised to tell you something about the Ten Meter Telescope for which we are developing the active control system right here at the UC Lawrence Berkeley Lab. Maybe next time I will. But then again: would any one of you Morrow owners be interested at all? Or would it be a bit like a soapbox feature again? I'll think about it. You do to.

Because I'm old enough to be fussy about the way things run on my computer, the many problems I have encountered in the customizing and setting up of Wordstar 4.0 for my system made me feel like I had been ripped off.

First there was the problem of not being able to have the full use of the spelling checker. These programs require more disc space than is available on a single-sided double density system, and MicroPro won't offer a patch to permit some of the files to be loaded on another drive.

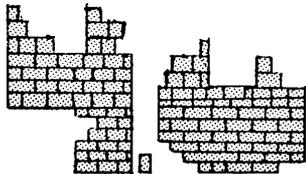
Then there was the problem of going through hell (for a non-hacker) to customize a printer-driver only to find out that the proportional spacing tables are absolutely inflexible, leaving no fine-tuning format control for a document within the text file.

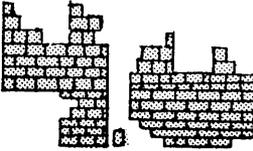
However, the most irritating problem of all was in not being able to redefine the "single burst" cursor/arrow keys on my terminal from the standard CP/M set to the WS "diamond" set. (MicroPro poured salt into this wound by making it readily possible to redefine the "multiple burst" personal function keys via the menu driven options in WSCHANGE.)

The only way around my first problem was to get more disc space. So with the gracious help and assistance of BAMDUJA, Silicon Valley Surplus and George Borys I updated my SSDU Morrow MD-2 Rev. 1.0 to a DSQD (on both drives) MD-3 Rev. 3.1. Wow, there is a whole new world of CP/M here, with Z80DOS and ZCMD29MD to boot. Just incidentally, all of the WordStar COM, OVR and XCL files, plus all of the WordPlus COM, CMP and TXT files (totaling about 510K) now fit onto one disc, with room for about 280k of utility files as well.

After trying all of the possibilities with the printer drivers in wS4.0, I realized that they could never out perform the tremendous variety and flexibility of printing controls offered by the MagicSeries programs. These superb printing utilities not only give you true typesetting capabilities with almost any printer, but they also have such a powerful merge printing mode (with infinitely less repetitive keyboarding commands than WS) that you can use these as well for a really simple but tremendously flexible data base system (with reports you can design with WordStar).

Imagine being able to move any letter or symbol in any direction on a printed page, with a tremendous range of increments, as well as a set of print control commands that WordStar never thought of (like right flushing, or four different kinds of proportional spacing) using either a dot command or a TP command within the document file. My advice is to not bother with phasing upward from MagicPrint to MagicBind and then to MagicIndex. Go to the top, it's cheaper in the long run, and you'll also get such bonuses as an automatic three-level document heading, sub and sub-sub numbering capability, and an indexing system that is vastly superior to what you have with WordStar.





Perhaps the most satisfying problem resolution of all, however, was to learn that I could redefine my cursor arrow keys with SmartKey. This was after trying key, YKey21, MagiKey and even Z3Key. Although my terminal transmits a single burst control character from these keys, it does not offer the extra 'shift' and 'control' levels. However, when I redefine the ^K to ^E for the up arrow, I don't lose the ^K, for the Block & Save Menu in WS, because if I type "Supershift Up Arrow" (without having redefined that key) I'll get a ^K. Don't ask me to explain this, beyond telling you that you don't have to alter the default setting in the SmartKey patch options for resetting the high bit.

The beauty of all this is that with just four redefinitions in SmartKey I've got the Arrow Keys working in WS4.0, I haven't lost access to the special control key codes these original key transmissions give which are required by WordStar, and I've got a ton of disc-resident boiler plate and involved commands that is accessed quite readily from within WordStar (and let's face it, MicroPro was pretty chintzy with the space made available in the Shorthand Menu for boiler plate.)

Here are some afterthoughts. SmartKey 2.+ is the latest version available in CP/M, although SmartKey 4.2 has some really desirable advantages. The publisher has given up on CP/M. However, Eric Mayer has published a PD version of SK 4.2 in the Osborne CP/M format, and hopefully that is only a step away from the MD format -- if we can persuade some of our own nackers to look into that. Also, the publisher of MagicSeries has a very nice group discount program for corporate accounts. He might be persuaded to make a similar offer to a user group account like BAMDUA.

New
Subscriptions
& Renewals

■ BAMDUA (Morrow users) ■

Send your name, mailing address, and check or money order in the amount of \$20 to: P.O. Box 5152, Berkeley, CA 94705

■ BAKUP (Kaypro users)

Send your name, mailing address, and check or money order in the amount of \$20 to: P.O. Box 8537, Berkeley, CA 94707-8537.

FROM THE MAILBOX by Bill Steele

Mail: P.O. Box 782
Ithaca, NY 14851
MCI: WSTEELE, 254-5833

Now that we're back in business and old MOR subscribers are gradually finding their way to the MOR Atlanta and BAMDUA/BAKUP newsletters, the questions are starting to trickle in. I'll repeat an admonition from the old column: I need **answers**, too. Don't assume that someone else will write in, because there aren't that many of you out there.



About a third of the letters over the past six months or so have been about WordStar 4.0. I finally broke down and ordered it myself, and have gotten into it far enough to answer an old question about programming function keys. Yes, although it's not explained at all in the manual, you can program the function keys in exactly the same way you could with all versions of NewWord, by entering the hex values of the "bursts" sent by your terminal's keys and of the sequences of commands you want them to invoke. This is explained in the user area listing which is no longer supplied in printed

The laws of cosmic cussedness seem to require that all documentation be either incomprehensible or incomplete.

form but is in the file "PATCH.LST" on disk #4. It's explained in a lot more detail in an article I wrote for the Morrow Owners' Review (Vol. 1, #4, Oct. 1984). If you can't find a copy anywhere else I'll send you one for the usual fee: an SASE plus 16 cents to feed the copy machine. Entering the function key list is a fairly laborious process, involving a lot of careful typing, but it's especially worth it with memory-hogging WS 4 because with this and WS's macros you can get along without Smartkey and/or KEY.COM. Since I wrote the article I've learned how to automate the programming process with Submit files. More on that in future issues.

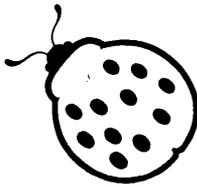
Tom Shanks writes that that he solved his WS 4 underlining problem (he wanted to do continuous underlining, and .ul on didn't work) by going into WSCCHANGE, PRINTING DEFAULTS, where he found the selection "UNDERLINE SPACES, ON/OFF" and changed it to ON. He grumbles that this isn't explained in the manual, and I agree: the laws of cosmic cussedness seem to require that all documentation be either incomprehensible or incomplete. This still doesn't explain why the dot command didn't work with his brother HR 15. Tom adds that he didn't mind my using him last time as a shining example of naivete (Whew!).

Elsewhere in both newsletters **Ilbert Butler** has answered a question I printed about uncrunching files while extracting them from libraries: it seems NULU still won't do it, but the public domain programs LT, QL and TYPELZ will.

Everything else this time seems to be about printers. **Lewis Parkhill** asks how to go about connecting two printers, e.g., a daisy wheel and a dot matrix; another old subject that bears repeating. One approach: if one printer has a parallel interface and the other a serial and you have an MD3 with both types of connectors, you can connect one printer to each -- best to have the daisy wheel on the serial interface which sends data a tad

slower. Note that the MD requires a special kind of parallel cable with an edge connector at the computer end; you can buy these cables at Radio Shack. Make up two disks for each program you want to use with both printers, and use SETUP.COM to designate the printer port on one to serial and on the other to parallel. If both printers have the same kind of interface or if you have an MD2 with only one port, you need an "A-B switch" which allows you to connect both printers to one port and switch back and forth. (An A-B switch also lets you connect a serial printer and a modem to the serial port without plugging and unplugging cables.) You may still need two versions of each program, one installed for each printer type; NW Vers. 3 and WS 4 allow you to select printers by name. Most stores sell the switches for about \$60, but CompuAdd in Austin, TX (800-627-1967) advertises them for \$25-30, and you'll find bargains in surplus.

Arthur Binder reports that his Qume printer suddenly stopped underlining with NewWord; it now prints a caret (^) where underlining should start and end. Whenever underlining is called for, NW sends an escape sequence to the printer that tells it to go into that mode; sounds like the place where that sequence is stored on the NW disk has gotten zapped (I dunno from Qumes, but maybe the sequence is "ESC-Caret" and the ESC character got lost somewhere.) Try reinstalling NW on a fresh disk.



When the going gets tough, the tough get

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TIPS

Computers need ventilation to keep parts cool. Many computer parts generate a lot of heat, and this heat needs to be removed to keep the parts from self destructing and to pre-vent premature failure. Many Morrow

MD3-Ps and hard disk Micro Decisions have power supplies which are especially likely to fail over time from overheating. A very simple main-tenance procedure for users of these computers is to **clean the dust from the outside of the fan screen**. I do this with a vacuum cleaner hose and a paint brush. Go check your fan screen now. You may never know how much trouble you've saved yourself.

What to try first when a Morrow MT70 terminal key won't work every time: Remove the key cap by getting underneath it with a bent paper clip or a small screwdriver (or some-thing) and pull it straight up away from the keyboard. Then put a tiny screwdriver in the rectangular hole at one of the three corners of the keyswitch. Pry inward against the moveable part of the switch until that corner of the move-able part releases and moves up a tiny bit. Pry up at the other two corners also and then remove the plastic part you just pried out. Inside you see a grey rubber thing that looks like a miniature toilet plunger. Try to remove it and set it aside without rotating it. (so that you'll know how it was oriented when you replace it). Use a pencil eraser to clean the exposed metal strips left in the key switch. The most important part to clean is the raised dots. Don't over-do it; three or four not to heavy passes should be enough. Now you're ready to put the plunger back in. Resist the temptation to clean it: I've had only bad luck cleaning these. But look at the black contact part. You may see the im-pression left by the raised dots on the contact strips, or you may not. Either way, try to replace the plunger so that it is rotated 90 degrees from its original orientation, so that a new surface will be contacting the raised dots. Now just press in the plastic part you pried out earlier, press on the key cap, and see if you've solved your problem. (Michael Jones of DataMax Computer Systems, Lake Junaluska, N.C., gets a lot of credit for helping me develop this one.)

Another tip: avoid static charges or discharges when handling the keyboard connector cord.

—RON JACOBS

Correspondence



Queries



Complaints



Editorial Submissions

For Kaypro-related articles, advertisements, or memberships in BAKUP (\$20/yr), write to P.O. Box 8537, Berkeley, CA 94707-8537; or call Bob Atney at 415-526-3541.

For Morrow-related articles, ads, or memberships (\$20/yr) in BAMDUA, write to P.O. Box 5152, Berkeley, CA 94705, or I. Butler at 415-526-8655.

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[Bruce Gowens does Pearl consulting, but doesn't charge to help Pearl users with glitches and small problems. He can be contacted on the MOR RBBS, (415) 654-3798, or write to his new address (P.O. Box 8068, Emeryville, CA 94608) and include permission to call you collect.

BAR FOO!

Somehow FOOBAR (often known as FOO.BAR) has found it's way into computer jargon, and the MOR RBBS recently had some messages about the term's origin. Although that's not my subject, I couldn't resist that sub-title since I am going to discuss file-name.FOO and some other temporary files that Pearl creates.

When all goes well, Pearl makes and uses these files and then erases them so you should never see them. But this is not a perfect world and they occasionally show up on the disk, usually when some Pearl process is aborted. Generally their presence causes no problems, since the next time around Pearl simply overwrites them as needed. BUT (there's always a "but"), sometimes Pearl seems to use the presence of a temporary file to tell itself what it is doing -- and then...

I got a call from a BAMDUA member where this was the problem. Everything seemed fine (and everything verified) until he went to print a report. Then error message 303 popped up (attempt to read beyond end of file). Usually an attempt to read beyond the end of the file is caused by a bad index (.E00) or improperly closed data (.D00) file. He did the usual corrective of running File Maintenance option 2 but it didn't help.

After going over the possibilities on the phone and suggesting a few things to try, it looked like I might have to go to his place for some more elaborate testing and trying. But the problem kept running around in my mind, and so I decided to take a most extreme step. I followed the advice that Kodak gives to photographers: "When all else fails, read the manual."

I use Pearl's last manual, so I'm not sure that the information is in the Morrow Pearl book. But there it was: "2. If ... while attempting to produce a report..." FOOBAR! I called the BAMDUA member back and we checked his disk -- and there .FOO was. A delete and the report ran fine.

So looking for temporary files is another troubleshooting thing to do. Here's the list: .FOO, .K00, .P00, .Q00, .T00, .V00 and .\$\$\$ (If you are using MS-DOS Pearl, the last two characters of the extension are "01".) This might also be the problem if the error is number 353 and some others.

I understand that foobar was a military term roughly equivalent to SNAFU, but I'm sure the Pearl programmers weren't thinking of that when they chose .FOO (well, almost sure). Anyway, bar it (moans acceptable).

WHOOOPS!

"WHOOOPS!", as some of you might have discovered, is the complete text of one of Pearl's (many) undocumented error mes-

sages. It's certainly informative and reassuring, especially since the machine just sits there imitating a doorstop. Press return, however, and one or Pearl's more usual messages will appear. I finally found out what WHOOPS! is supposed to mean to mere mortals (Morrrows go on forever). You have a report that has been designed under the wrong form.

This can happen where you have several forms in your design, and the report is getting information from more than one (see MOR, June/July '86, p.28). Each report is under or attached to a particular form, which is the one that has the fields that you are going to sort on. If you select the wrong form, WHOOPS!

One design consideration is how you are going to pull information out -- in other words, the reports. When setting up a Pearl base, try to think of what you might want OUT rather than what you are going to put in (Think Backwards!). If you have a feeder form that is going to require a sort on one of its fields, but the report must be under the receiving form, then you had better save the data into the receiving form rather than make it display-only.

FILE MAINTENANCE OPTIONS 4,5,6

Most Pearl users find these options very confusing for the good reason that they have no use for them. I will go so far as to say that nobody should ever use them (I don't!). You should not consider them for troubleshooting no matter what the screen or manual says. Why, then, are they there?

The difference is between the way you use Pearl and the way a large corporation with lots of data and Pearl Gurus would work. Of course, I don't know of any large corporations, etc., that are using Pearl. But PearlSoft had high hopes, and Pearl was developed from an earlier program that was for that market.

A large corporation will have two separated functions--the users, which Pearl calls the "production" environment, and the designers, maintainers or programmers that set up the data base. So the data base is being used, with lots of chipmunks entering data and producing reports, while the squirrels are making changes in its layout and structure. Obviously, the "production" environment can not be interrupted or the chipmunks will not get their weekly ration of nuts from the bears. So the squirrels work separately on another machine. Options 4, 5, and 6 are supposed to make it easy for the squirrels to transfer the completed changes to the production environment.

There's an easier way. Simply overwrite the old .S00 and you've saved a copy somewhere). Then re-install the forms and reports. If fields have been eliminated, run File Maintenance option 3, compact. If you do it often, make a submit file (see sidebar "COMMAND LINE ENTRIES", MOR, Oct/Nov '85, p.24).

You do have a complete file of MOR, MOR-ATLANTA and BAMDUA newsletters, don't you?

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nobody knows if this is an article, an occasional series of articles, or a column. Nobody, that is, but you. So if you find it interesting, write to the editors and ask for more. If enough readers ask for more it will be an occasional article. If everyone asks for more it will be a column. (The author requests that you **don't** make it a column since he lacks imagination.) The concept is a bit of this and that about programming in Turbo Pascal with the idea that a little bit of knowledge is a very useful dangerous thing. Robert Heinlein once included "programming a computer" along with "burping a baby," "basic book-keeping" and "first aid" in a list of things that define a competent human being. You don't have to be a programmer, but a little understanding can go a long way in using your machine. And if you are a programmer, you may find a useful nugget here or there.

When Optimization Doesn't: The professional programmer press has recently had a bit of fuss about "optimization" compilers. These are supposed to (1) improve the speed of programs written in high level languages such as C, Pascal, and even, ugh, BASIC, and (2) make life easier for the programmer. They do (1).

A high level language is something that you and I can learn to use without too much grief. The "structured" ones (such as Pascal) look and act somewhat like an outline in English. The low level language is Assembler (or, if you are totally out-of-your-mind crazy, machine code). A compiler is the program that "translates" what you have written in a high level language into something the machine can use as a program (making a ".COM" or, in MS-DOS, an ".EXE", file).

Since the compiler must be able to make sense of what you want the machine to do, it must translate your high level instructions into machine code that will **always** do that thing. If you use a low level language such as Assembly you must direct the machine each step of the way, and can take shortcuts that really cut down the number of machine operations. Of course, to write programs in Assembly it helps if you are a very patient, painstaking genius.

Enter "optimization" compilers that eliminate wasted machine cycles and cut program size. It is beyond the scope of this article to describe all the ways they work, but Turbo Pascal 3.0 for CP/M (let's call it TP3) is an optimization compiler -- long before even the programming magazines sprouted articles and ads. That is one reason that programs written in Turbo Pascal run so fast.

There is, of course, a flip side to the coin, as I discovered on my trusty Morrow with TP3.

You know that computers are binary ("digital") rather than decimal, but it doesn't concern you much unless you are programming. One aspect of binary numbers is that the shl (Shift-Left) and shr (Shift-Right) TP3 operators will multiply or divide a number by two. If some variable called "Eight" were equal to 8, then "Eight shl 2" is $8 \times 2 \times 2$, or 32 (the number after the shl

or shr operator is the number of places the shift goes). "Eight shr 1" would be $8/2$, or 4.

Don't go away! It's easy! Let's pretend that computers worked with decimal numbers just as we do, and see how shl and shr would work. The decimal number TwoThousandAndTwo has the value of 2002. "TwoThousandAndTwo shl 2" would change its value to 200200. In decimal we multiplied by 10 each time we shifted left, because each place represents a multiple of 10. With binary numbers each place represents a multiple of two instead of ten. A quick pause to think about that should make it clear--your children who had other-base arithmetic in fourth grade will find this simple since binary is base-2 and decimal is base-10; we oldsters have to do a little mental gear-shifting (no, I won't talk about base-16, which we all know and hate as "hex").

You know that a byte consists of eight bits. You can think of a bit as a "place" in a number (byte). In the decimal number 87654321, the digits correspond to the location of the bits in a byte. 8 is the "high bit," for example. Since binary numbers only have two digits to work with, a byte (string of eight bits) is represented as 10010011 where a "1" is called "set" and a "0" is not set (i.e., it's a zero). This example has the high bit set.

The shl and shr commands have uses in TP programming other than multiplying or dividing by two, one of which might be the access to bits within bytes. By shl-ing and shr-ing back and forth we can kick what we don't want into the "bit bucket" (a classic "circular file" for bits) and determine the setting of a single bit. For example, the file attributes in the disk directory (read-only, system, archive, etc.) are set as bits in a single byte since they will have only one of two values--there is no need to use a whole byte to record each of them (programmers will more often use the XOR operator for this, however). En-ryption programs often use shr and shr.

Say we want to see how the bit in position 6 is set. For our example we'll declare that it is the only bit that is **not** set in the byte, so the byte looks like 11011111 (remember that we count from the right). We can do a shl 2 and it will become 01111100 (those two on the left went into the bit bucket and the new places on the right become zero bit value). Then we do a shr 7 and it becomes 00000000 (the seven bits to the right went into the bit bucket). Then if the byte has a value of 0 (as in this example) the sixth bit was not set; if the byte is 1, it was.

Now back to our subject of optimization (bet you thought I'd never get there). Programmers will tend to treat operations such as the above as if they were a mathematical expression, with inner parens done before outer parens. The operation described in the above paragraph is logically expressed in TP as:

```
BitSetting := (TheByte shl 2) shr 7;
```

but mathematically the shl and shr do some cancelling out and this expression is the same as:

```
BitSetting := TheByte shr 5;
```

Turbo Pascal will do it's best to optimize by avoiding unnecessary operations. That's right, instead of the two operations you intended, the TP3 compiler will first evaluate the expression to one simpler, faster operation -- even if that was not what you wanted the program to do. And the result of the code in the example will be "shr 5" or 00000110, a decimal value of six. If you follow that operation with something like:

```
if BitSetting = 0 then
  Bit6Set := false
else
  Bit6Set := true;
```

you are going to be very unpleasantly surprised with a very hard-to-find bug. The sixth bit was not set, but since the optimized code gives a value for BitSetting of 6, your program will think that it was set. (But I swear, Mr. Pascal, the code makes sense!).

Optimization is wonderful, every programmer loves it. But Pascal is designed to make every step clear, so watch out if you combine operations. Especially any that can be treated as mathematical expressions. So how do you do it? Easy:

```
BitSetting := TheByte shl 2;
BitSetting := BitSetting shr 7;
```

TP3 treats every line as another operation. Write it as you thought it--on two lines. Now a real optimization compiler would look further than one line, and... But that's another article.

As mystic gurus tend to say: "Every journey is taken a step at a time. Always watch where you put your feet."

GENERAL MEMBERSHIP MEETINGS -- EVERYONE WELCOME

BAKUP and BANDA members meet together on the third Tuesday of each month at 7 p.m. at the Albany Senior Center, 846 Masonic Ave., Albany. Take I-80 to "Albany Exit. Go east on Solano Ave. to Masonic, turn left. These meetings are a good place to ask questions, buy or trade equipment or programs, etc. Non-members are welcome.

When you've had a particularly trying day, you may have said to yourself, "Some day I'm going to chuck all this and go do something I really like doing." And then the left brain clicks in and says, "But can you live in the manner to which you have become accustomed?" Usually at this point, the idea of retiring evaporates into the far distant future, and you either think about getting another job, or ways of changing all the personalities of people you work with (radical frontal lobotomies?) or ... the mind just wanders off in a daydream in pursuit of its own pleasures.

However, this is a golden opportunity to do something constructive about planning your financial security. And a powerful planning tool is near at hand, closer than you may think. And it's free. Well ... almost. You have to do a little work to gather your financial data about you and examine your economic future realistically. That's hard work.

There is a CP/M CBASIC file in the BAKUP RBBS CPM-APPS file area named RETIRE.LBR ready to be downloaded to your computer and put to work to plan your financial future. You will need CRUN238 to run the program and CBAS2 if you want to modify program source code. The program prints the following form for fact gathering and assumption definition.

Current Age: _____ Retirement Age: _____

Current Annual Income: \$ _____ Savings/Investments: \$ _____

% of annual income you can save/invest: _____

% of investment income needed to live on after retirement:
(Include income taxes in living expenses.) _____

% rate of inflation you expect: _____

% rate of return you expect from investments: _____

NOTE: All amounts below are for 1 year. AFTER RETIREMENT

Amount of taxable income from sources other than investments	\$ _____ a
Amount of taxable income from investments	\$ _____ b
Amount of non-taxable income from investments	\$ _____ c
Total income from investments (b + c)	\$ _____ d
Total taxable income (a + b)	\$ _____ e
Amount of applicable income taxes on item (e)	\$ _____ f
Amount of tax in (f) that must be paid from investments (item d)	\$ _____ g
Amount of investments needed for living expenses	\$ _____ h

TOTAL (g + h)

\$ _____ i

% of investment income needed for taxes and
living expenses (item i divided by item d)

\$ _____ %

After entering the variables into the computer, tables of pre-retirement savings accumulation and post-retirement fund usage are displayed on screen or optionally printed. Serious analysis of the data can result in a re-examination of goals and give new insight into managing your career. If you cannot contact the BAKUP RBBS, call me at 415/527-2110 to discuss an alternative. Turn those daydreams into rewarding reality.

EDITOR'S NOTE: This article is printed as received, but the perception that it may be a sales pitch requires a reminder - Caveat Emptor. However, Leonard assures me he is not out there hustling his services as a retirement adviser for fees to be earned. Now, I would have been, but then that's already my business ...

Think also in terms of those earnings you may do as a retiree that come from those things that you like to do, and can sell at some profit! Writing and consulting come to mind. One could even envision the expansion of his calculations in a spread sheet "what if ..." bit of reasoning for estimates based on differing interest rates, variation of age at retirement...

Scientists have odious manners, except when you prop up their theory; then you can borrow money from them.

--Mark Twain

The sciences are benificent. They prevent men from thinking.

--Anatole France

Science is all wrong. It never solves a problem without creating ten more.

--George Bernard Shaw

Science is a collection of successful recipes.

--Paul Valery

Art is I; science is we.

--Claude Bernarde

Scientists could study the independent existence of a plum pudding for a thousand years before they discovered it had been steamed in a towel.

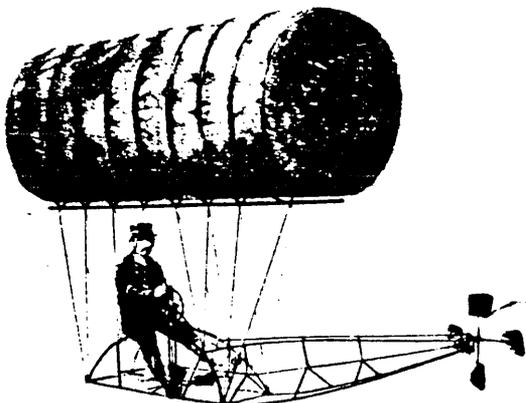
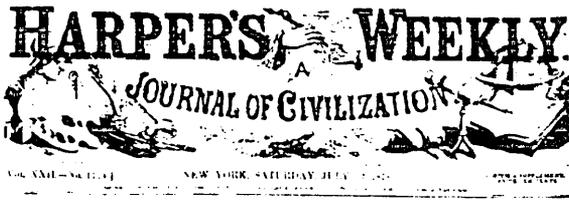
--Carl Sandburg

This short project was created for a friend who wished to build a radio controlled blimp. He needed to know how big to build it to obtain the amount of lift necessary, and then how much helium and skin fabric to buy. He began armed with pencil, paper and hand calculator. This is not difficult number crunching, but there's a lot of it. Being a life-long fan of airships and similar creatures, I volunteered to do the calculations.

The math started out not as a calculator project but as a BASIC program. It took a bit of reflection to realize that this an ideal job for a very simple ("Anycalc") spreadsheet!

First, the blimp drawing was sliced up into a number of sections, and each section was estimated to be a cylinder of some diameter and some length. The length of each section was entered as a variable at the top of the spreadsheet. The diameter of each section was entered as the row. The volume and the surface area of each section could then be calculated in their own columns. First the spreadsheet calculates the lift for each volume, and then it subtracts the weight of the skin (volume increases with the cube of the diameter while the surface area increases with the square of the diameter). Hence the net lift.

This little program also brings to bear a method called numerical integration. The program uses a simple linear method of numerical integration that divides the blimp into a number of



cylinders and then averages the radius between the sections. Breaking the design into smaller cylinders would more closely approach the actual volume. (There is another integration method [Simpson's] which allows for the curvature of the structure, using smooth graceful lines rather than chunky cylinders.)

Spreadsheets adapted to do numerical integration can then be used to calculate boat flotation, weights and strengths of tanks and design of spaceships.

We designed a ten foot blimp by cutting it into ten sections but one hundred sections would have been just as easy. Only a few variables are needed: the lift per cubic foot of the lifting gas (helium), and the weight of the material used for the skin. A more thorough program would include tables for air temperature, ballast, etc. It was not difficult to allow the spreadsheet to calculate the center of lift and center of mass (they should be at the same location).

The beauty of this design system is that it allows many rapid design iterations by entering only the changes, without having to start over each time. No expensive math programs had to be purchased or written. Spreadsheets have the reputation for just doing financial calculations. Doing non-financial stuff demonstrates their versatility and is a whole lot more fun. Count Von Zeppelin would have loved this.

BLIMPS

LIFT lb/ct 0.06
 SKIN WEIGHT lb/sqft 0.01

HELIUM

SECTION NUMBER	RADIUS	VOL	SURFACE AREA	SKIN WEIGHT	GROSS LIFT	NET LIFT	TOTAL LIFTS	TOTAL WEIGHTS
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.80	0.50	2.51	0.03	0.03	0.00	0.00	0.03
2	1.40	3.80	6.91	0.07	0.23	0.16	0.16	0.09
3	1.80	8.04	10.05	0.10	0.48	0.38	0.55	0.19
4	2.00	11.34	11.94	0.12	0.68	0.56	1.11	0.31
5	2.00	12.57	12.57	0.13	0.75	0.63	1.73	0.44**
6	1.80	11.34	11.94	0.12	0.68	0.56	2.29	0.56
7	1.50	8.55	10.37	0.10	0.51	0.41	2.70	0.66
8	1.20	5.73	8.48	0.08	0.34	0.26	2.96	0.75
9	0.70	2.84	5.97	0.06	0.17	0.11	3.07	0.81
10	0.00	0.38	2.20	0.02	0.02	0.00	3.07	0.83
TOTALS		65.09	82.94	0.83	3.90	3.07		

**Center lift, center mass

VOLUNTEERS WHO ANSWER HELP CALLS OF MEMBERS

PERSON TO CALL IF YOUR PRIMARY CP/M EXPERIENCE IS WITH KAYPRO

PERSON TO CALL IF YOUR PRIMARY CP/M EXPERIENCE IS WITH MORROW

re: Beginners & General

Athey - Folsom (beginners SIG)
Van Sickle

Campbell - Charnes - Korte
Oechsli

re: CP/M, MS-DOS & Other Operating Systems

Fowler - Pugh - de Castro
Winyard - McPheeters(hardware)

Borys(hardware) - Butler(Mac)
Campbell(Mac & Atari) - Korte

re: Other User Groups, Newsletter

Athey - Winyard

Butler(legal)

re: WordStar & NewWord Word Processing

Athey - Buck - Peebles

Butler - Campbell - Charnes
Naparst - Oechsli

re: Database Programs

Pugh (dBASE) - Cole (Pearl)

Campbell (dBASE) Gowens (Pearl)

re: Perfect Writer / Calc / Filer

Bruner - de Castro - van Oosten
Athey (Calc) - Willett (Filer)

(not common among Morrow)

re: Programming Languages

Bruner (MBasic) Winyard (Pascal)

Borys (MBasic) McKusick (Pascal)

re: ZCPR3 Systems & MEX Modem Program

Charnes - Fowler

Charnes - Korte

re: Other Programs by Name or Type

Lautenberger (spreadsheets)
Becker (Handyman) Bruner (XtraKey)
Uzzell (Framework)

Charnes (BackGrounder)
Johnson (Quest & spreadsheets)

415 AREA CODE PHONE NUMBERS & RULES FOR ALL CALLERS

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Dennis Becker 625-3868
Bob Bruner BBS or 528-1065
John Buck 268-9541
Ted de Castro 581-8882
Leonard Cole 527-2110
Anne Folsom 843-5168
Ken Fowler 222-0830
Walt Lautenberger 283-2266
Woody McPheeters BBS 548-3126
Chris Peebles til 11 655-4438
Steve Pugh 527-7272
David Uzzell 465-3013
Jeanne van Oosten 547-4792
George Van Sickle 682-3188

PRIMARY CP/M EXPERIENCE MORROW

George Borys til 11 582-7615
Ilbert Butler til 11 526-8655
Peter Campbell 527-3387
Rick Charnes BBS or 826-9448
Bruce Gowens 268-9450/845-8002
Wesley Johnson til 9 444-0566
Gene Korte 525-8944
Lee McKusick am only 849-9053
Stan Naparst 525-2086
Frank Oechsli 527-6089

RULES FOR ALL CALLERS:

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Returned COLLECT
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RAM, Dual 5-1/4" Disk Drives, MS-DOS 2.11 and Battery \$1,195

Options: 1200 Modem \$195
Ext'l Video \$185
10Mb Hard Disk \$795
360K add'l RAM Disk \$149

ZENITH 183 PORTABLE

Dual Speed, Super Twist Screen, 640K RAM, 20 MB Hard Disk & 3-1/2" Floppy



\$2,195

Options: Portable printer! \$145
PC file xfr software with cable \$95
Carry Case \$60

BLUECHIP IBM Compatible

Includes: 640K RAM; Mono Monitor; DOS; 2 Serial 2 Parallel, Clk/Cal, and 30 Meg Hard Disk \$995

AST Premium 286 6, 8, 10 Mhz; No wait state. PC Magazine Editor's Choice

Includes: 1.2Meg/360K Floppy; 512K RAM; Clk/Cal; Mono-Graphics Mon & DOS, and 20Mb Hard Disk \$1,995

CORDATA AT IBM Compatible 8 MHz

Includes: 360K Floppy; 640K RAM; Clk/Cal; Mono-Graphics Mon; DOS; Tutor and 20Mb Hard Disk \$1,495



ZENITH Z-158 IBM Compatible

Dual Speed
Includes: Floppy Drive; 640K RAM; Mono-Graphics Monitor; DOS; and 20Mb Hard Disk \$1,195

DOT MATRIX PRINTERS

Epson FX 85 \$275
OKI Cut Sheet Feeder \$150

HEAVY DUTY LETTER QUALITY PRINTERS

DTC/Olivetti: 45 cps with dual bin cut sheet feeder & tractor \$895
Primage 90: 52 cps with single bin cut sheet feeder & tractor \$895

LASER PRINTERS

Okidata Laser Line 6: LaserJet Plus compatible with 15 fonts \$1,695
NEC 890 (Postscript & LaserJet Compatible) with 35 typefaces & 3Mb RAM \$3,495

CABLE/SWITCH

Parallel Switch \$89
Serial Switch \$79
Parallel Cable for Morrow or IBM \$16

For Morrow Printers:

Tractors \$135
Multi-Strike Ribbons \$7
Print Wheels \$18

MODEMS

1200 Modem \$289
Volksmodem-300 \$20
Hayes Compatible - 1200 Internal \$99

SOFTWARE & MANUALS

Supercalc II for Morrow CP/M \$185
Turbo Pascal Ver. 4.0 (IBM) \$55
Reachout Upgrade for MM 300 \$10
Perfect Software for MS/DOS \$50
SuperCalc 4 for MS/DOS \$179
Ventura Desktop Publisher \$450
Morrow Software Manuals (each) \$5

SCANNER & FAX (IBM Comp.)

Datacopy 730 Scanner with interface & Publishers Paintbrush \$1,295
Datacopy Microfax (internal FAX board with 1200 Baud Modem) \$795

LOCAL AREA NETWORK

Adevco/Morrow Kit (List \$350)
For MD-3/3P/5/11/16/32 \$90



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