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INSIDE:

Column One

M/A Com OSI is looking for software. I mean, they are REALLY looking for good programs and program systems, bulletproof business applications with good documentation. There is a confidentiality agreement available for software writers, to protect your ownership rights in the software until and unless you and M/A Com OSI come to terms.

If you have written something you are proud of, contact M/A Com OSI at the address on the back cover of this month's PEEK(65).

Of course, any further details will be published in PEEK(65) as they are released.

Perhaps we should also direct your attention, and theirs, to the large variety of free goodies offered by this month's advertisers. A free accounting software demo disk; a free overview of a new database manager; a free documentation kit. In this world where most software companies offer to SELL you their manual at a rather inflated price to let you decide if you want their software, most anything free is a refreshing change!

All of this, as usual in this space, leads up to a point. We in the computer world are gradually learning that a computer without real, working, friendly software is like a ham radio kit. Very nice if you are a hardware freak and like to play around with expensive and complicated gear. A very expensive paperweight if you are a small businessman trying to get the iron to do something useful for you.

Until recently, OSI has enjoyed a well deserved reputation for terrific hardware, poor documentation and nonexistent applications software. Both of the above news items seem to be responding to this lack of software. "Write something good and we will help you sell it," says the factory. "Hey, we have some good stuff, and we are willing to give away free samples to convince you," say the vendors. Both of these strike me as very encouraging developments.

Along with all those nice ads, we have some nice articles in this issue. A business article or two, some technical stuff, and our cassette corner -- and there's the rub. David Jones, our faithful Cassette Corner Creator, has gone disk! Of course, we still want to hear from David, his creativity and style have become an important part of PEEK(65). But how many cassette articles do you think he will write now that he has his disk clicking away! There's room for David AND for you, if you have a cassette system and would like to write for PEEK(65).

As always, we continue to seek articles on business applications of M/A Com OSI equipment. Some of you dealers touting your terrific accounting and database management packages -- get your star installations to write to us, explaining in simple terms how your brilliant software has transformed their business. We don't want disguised ads ... we want real articles, by real people, telling us their experiences. Get them busy!

In response to recent press reports, M/A Com OSI has released the following statement:

"OSI is committed to expand its leadership position in Microcomputer technology and to maintain a permanent business relationship with our dealers, with no unnecessary changes or interruption. We are also committted to the development of the financial stability and technological resources required for the success of our business. Through planned research and development program, we wish to introduce new hardware and software to supplement recently announced new state of the art OSI projects now on the market and selling well.

Company management is strong and remains dedicated to OSI and our dealers future."

al

SOME QUICK FIXES FOR OSI ROM BASIC

PART ONE

by Steven P. Hendrix
Route 8 Box 81E
New Braunfels, TX 78130

The Basic interpreter in ROM is one of the biggest things which OSI did right on the C1P and other systems in their line. It is there immediately on system reset, without any need to load it from tape or disk. However, it is difficult to modify without changing the ROMs or replacing them with EPROMs or RAM. I have heard of other users who have replaced their ROMs with RAM and added RAM at $8000-$9FFF (normally unused space), yielding a 48K system. I personally like the convenience of ROM Basic, but I have modified my system to allow the option of moving some of its RAM up to take the place of the ROMs so that I can experiment. That, however, is the subject of another whole article. In this article I intend to point out some very simple "quick-fixes" for some of the annoying things in the Basic interpreter, like the fact that a program dies if you respond to an INPUT prompt with just a RETURN. I have designed the patches so that you can implement the changes in one ROM without affecting the other three, or you can make all the changes at once. For changes requiring more than a few bytes of machine language, I will give both the object code and the source code, so that you can better see how it works.

BASIC 1 ROM

The Basic 1 ROM at $A000 - $A7FF holds the core of the interpreter, the reserved word lists and vectors, the error messages, the input processor and code for several verbs, making it fruitful ground for changes. These changes will generally not affect how a program runs, but simply add features and dress up the system for the user. For instance, all the error messages are now given as a letter followed by a graphics character. In fact, the second character was supposed to be a letter (and most of the two-letter error messages make sense), but somewhere along the way, bit 7 of each of those characters was set to 1, making it a graphic instead of a letter. The message for "syntax error" should have been "?SN ERROR", but the "N" comes out as a graphic character because of this bug. The error codes appear at $A164 - $A185, and the bytes which you should change are:

```
$A165  C6 ->  46
$A167  CE ->  4E
$A169  C7 ->  47
$A16B  C4 ->  44
$A16D  C3 ->  43
$A16F  D6 ->  56
$A171  CD ->  4D
$A173  D3 ->  53
$A175  D3 ->  53
$A177  C4 ->  44
$A179  B0 ->  30
$A17B  C4 ->  44
$A17D  CD ->  4D
$A17F  D3 ->  53
$A181  D4 ->  54
$A183  CE ->  4E
$A185  C6 ->  46
```

Since they chose to use the commercial "at" sign (@) as the "line-cancel" character, it is impossible to type that character in a line. Though Basic itself does not recognize that character, you may need to type it in a string. You can of course do this by using CHR$(64), but this is a kluge at best. Instead, you can assign the line-cancel function to any key you wish (though you might not want to use certain characters such as RETURN for this purpose). I changed mine to the more standard ctrl-X character, but you can use other ctrl characters by remembering that CTRL pressed with an upper-case letter generates the character given by CHR$(X), where X is the number giving that letter's position in the alphabet - ctrl-A returns a 1, ctrl-Z returns a 26, etc. Do not use ctrl-M, because that corresponds to a RETURN. The character used appears at $A36D. In the ROMs, this byte is $40 (@), but I have changed it to $18 (ctrl-X).

When you type more than 71 characters in a line, Basic only accepts the first 71 and then prints a graphic character for each additional character you type. You can change this to any desired character by changing the byte at $A37D, currently a $07. I changed it to $00 so that there would be nothing at all typed and I can see exactly where the line really ended. With this change alone, Basic will interpret hitting the end-of-line as a RETURN, which can be good or bad depending on your application. I find it a major bother, so I disabled this side effect by changing $A381 from $D0 to $10, which has no other effect.

This next patch has a one-two punch which makes two useful changes at once. In the original ROMs, RUBOUT is decoded but Basic ignores it. The key is very conveniently placed for use as a backspace; much easier to use than shift-O. Also Basic does not allow you to type control characters in a line, to enter them in a string for example. With this patch, you can type any control character not otherwise used by Basic (i.e. RETURN) into any line. About the only interesting thing you can do with this on the screen is enter a LINE-FEED character, which will cause the line to have a step in it like
this
when you list it. If you have modified your system to recognize other control characters such as a screen clear, you can also enter those characters. The biggest use, however, is in laying out programs to include all the necessary control functions for automatically formatting listings on a printer. For example, you could end a line with REM followed by the appropriate form-feed character for your printer, making the printer do an automatic form-feed after that line. The changes involves three bytes:

```
$A365  20 ->  7F
$A366  90 ->  F0
$A367  F1 ->  E3
```

The two changes in this paragraph aren't particularly useful in their own right, but rather make space for adding a function below. In the original interpreter, CLEAR first checks for syntax errors between the verb and the end of statement before actually clearing the variables. I have rarely seen a situation where accidentally clearing

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variables would have been a major disaster, though NEW might have qualified (it has similar protection). By changing the CLEAR vector, we can save some space in another area:

```
$A034  8B ->  79
$A035  A6 ->  A4
```

The verb NULL permits a maximum argument of 10, but I see no reason to limit it like this. In fact, it is easier to read listings as they go past on the screen by adding many nulls to the end of each line than by slowing down each character. Again, this change is mainly to gain some space, but is loosens a constraint itself - NULL will allow an argument of up to 255:

```
$A67B  20 AE B3  JSR $B3AE
$A67E  86 0D     STX $0D
$A680  60        RTS
```

Now for the real reason behind those last two changes: an added verb! Since the verb LET is rarely used explicitly in a program, we can replace it with another verb. The new verb must be 3 characters long and must not disturb the code which performs the function of LET, since that code is used by a line with an implied LET. I chose to add the verb KEY which waits for a key to be pressed and places the ASCII value of that character in a variable: KEY X will place the value in X. To change the verb LET to KEY and point its vector to the space where the code will appear:

```
$A09E  4C ->  4B
$A0A0  D4 ->  D9
$A00E  B9 ->  80
$A00F  A7 ->  A6
```

The code which will execute the function of KEY:

```
$A681  20 0B AD  JSR $AD0B
 ; look up the variable
$A684  20 EB FF  JSR $FFEB
 ; Get the character
$A687  A8        TAY
$A688  20 D0 AF  JSR $AFD0
 ; Convert to floating point
$A68B  4C 74 B7  JMP $B774
 ; Store in variable & return
```

Since I use a modified version of the Basic editor for text editing (such as writing this article), I frequently type Basic commands while accidentally leaving the shift lock unlocked. Basic of course does not understand lower case verbs, so I get many SN ERRORs. Could it handle lower case? Of course! The next patch causes BASIC to convert all its reserved words from lower case to upper case:

```
$A3AC  B5 -> 20
$A3AD  00 -> 96
$A3AE  C9 -> A3
$AEAF  20 -> EA

$A389  EA -> C9
$A38A  EA -> 0F
$A38B  EA -> D0
$A38C  EA -> 08
$A38D  EA -> 48
$A38E  EA -> A5
$A38F  EA -> 64
$A390  EA -> 49
$A391  EA -> FF
$A392  EA -> 85
$A393  EA -> 64
$A394  EA -> 68
$A395  EA -> 60

$A3D8  B5 -> 20
$A3D9  00 -> 96
$A3DA  C9 -> A3
$A3DB  20 -> EA

$A396  EA -> B5
$A397  29 -> 00
$A398  7F -> 85
$A399  C9 -> FF
$A39A  0F -> 24
$A39B  D0 -> FF
$A39C  08 -> 30
$A39D  48 -> 04
$A39E  A5 -> 50
$A39F  64 -> 02
$A3A0  49 -> 29
$A3A1  FF -> DF
$A3A2  85 -> C9
$A3A3  64 -> 20
$A3A4  68 -> 60
```

Of course, since Basic does not recognize reserved words within strings or REMarks, you may type freely in upper or lower case in those fields.

BASIC 2 ROM

The Basic 2 ROM contains many of the major verbs and a portion of the routine to interpret arithmetic expressions. The only routines I found interesting changes for are the INPUT and OUTPUT routines. These routines are just the high-level code for interpreting the actual statements; the low-level code for character IO is elsewhere. The most important change here is in the INPUT routine. In the original ROMs, if you respond to an INPUT query by pressing RETURN without typing anything, the program comes crashing to a halt with no indication of what you did wrong. Several of my friends, uninitiated in the ways of personal computers, have been frustrated when attempting to play games on my system by accidentally pressing RETURN and causing a crash. Since the only indication is the OK prompt, they may go ahead and type in the response they had intended for input - which causes either a syntax error or a line to be entered in the program. In any case, after that not even CONT will recover the state of the program.

It seems logical to me that if the user makes a null input (presses RETURN without typing anything), he must want the variable or variables to remain at their present values. This is useful in programs in which you are updating information in a file, for instance. The program can print the present value of the variable and follow that with an INPUT, which will change the value if the user types anything or just leave it as is for a null input. In any case, the change is very simple:

```
$A944  47 -> 07
$A945  A6 -> A7
```

One small caution on this change: If your INPUT statement is asking for several values in one statement and you type at least one of them and later give a null input to the repeat prompt, all the following values in that INPUT statement will be set to zero. An example may help clarify this:

```
10 INPUT "A, B, and C";A,B,C
20 PRINT A; B; C
RUN
A, B, and C ?  14<cr>
?? <cr>
 14 0 0
OK
```

Another useful, simple change I found in the Basic 2 ROM was to add the ability to generate a carriage return - line feed pair easily in the midst of a PRINT statement. Of course, you can always do so via CHR$(13)CHR$(10) but this seems awkward to me. A better way would be to add another separator character akin to the semicolon and comma. I chose to use ! (exclamation point), so that if I type PRINT "AAAA"!"BBBB" the result is

```
AAAA
BBBB
```

Before I could make this change, however, I needed to make some space for the additional code required to support it. I shortened and clarified the two error messages used for bad responses to an INPUT statement in order to gain this space. The "REDO FROM START" messages has always been confusing to me. What it really means is that you typed a non-numeric response when INPUT was seeking a numeric value & I

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Authors note to players — I wrote this one with a concordance in hand. It is very accurate — and a lot of fun. It was nice to wander around the ship instead of watching it on T.V.

CIRCLE WORLD by Bob Anderson — The Alien culture has built a huge world in the shape of a ring circling their sun. They left behind some strange creatures and a lot of advanced technology. Unfortunately, the world is headed for destruction and it is your job to save it before it plunges into the sun!

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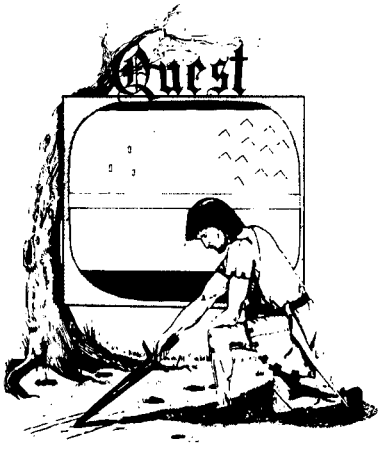

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EARTHQUAKE by Bob Anderson and Rodger Olsen — A second kids adventure. You are trapped in a shopping center during an earthquake. There is a way out, but you need help. To save yourself, you have to be a hero and save others first.

Authors note to players — This one feels good. Not only is it designed for the younger set (see note on Haunted House), but it also plays nicely. Instead of killing, you have to save lives to win this one. The player must help others first if he/she is to survive — I like that.

PYRAMID by Rodger Olsen — This is one of our toughest Adventures. Average time through the Pyramid is 50 to 70 hours. The old boys who built this Pyramid did not mean for it to be ransacked by people like you.

Authors note to players — This is a very entertaining and very tough adventure. I left clues everywhere but came up with some ingenous problems. This one has captivated people so much that I get calls daily from as far away as New Zealand and France from bleary eyed people who are stuck in the Pyramid and desperate for more clues.

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changed the messages to "#?", which I think is at least as clear as the original, terse though it is.

```
$A914  2D -> 23
$A915  A0 -> 24
$A918  C3 -> E5
```

The message "EXTRA IGNORED" has also been confusing to me, since in most cases it occurs because I typed a comma in the middle of a string. I changed it to read "EXTRA COMMA":

```
$AA1C  3F -> 45
$AA1D  45 -> 78
$AA1E  58 -> 74
$AA1F  54 -> 72
$AA20  52 -> 61
$AA21  41 -> 20
$AA22  20 -> 63
$AA23  49 -> 6F
$AA24  47 -> 6D
$AA25  4E -> 6D
$AA26  4F -> 61
$AA27  52 -> 0D
$AA28  45 -> 0A
$AA29  44 -> 00
```

Now for the actual changes to the PRINT routine. We must first patch into the routine - I chose the point at which it first begins checking for separators:

```
$A83B  C9 2C  CMP #$2C  ->
  $A83B  4C 2A AA  JMP  $AA2A
$A83D  F0 4C  BEQ $A88B ->
  $A83E  EA     NOP
```

And now for the addition to the print routine:

```
$AA2A  C9 2C     CMP #$2C
 ; Check for a comma
$AA2C  D0 03     BNE $AA31
$AA2E  4C 8B A8 JMP $A88B
 ; To the normal comma-handler
$AA31  C9 21     CMP #$21
 ; Check for exclamation point
$AA33  D0 06      BNE $AA3B
$AA35 20 6C A8  JSR $A86C
 ; Issue CR & LF
$AA38 4C BD A8  JMP $A8BD
 ; Resume normal processing
$AA3B 4C 3F A8  JMP $A83F
 ; Not a , or ! so pick up
   where we left off
```

As a companion change to the lower-case verb modification in the Basic 1 ROM, you can change the BASIC 2 ROM to accept lower case letters in variable names. One slight difference here, though: these are not converted to upper case but rather provide you with a greatly expanded set of variable names. You can mix upper and lower case in a name, but remember that Basic identifies the variable by only the first two characters. One slight glitch in this patch - the characters "[", "\", and "]" are accepted as letters. You can have a variable A[, aA, Aa, or even []. The change only involves two bytes:

```
$AD86  5B -> 7B
$AD89  A5 -> 85
```

BASIC 3 ROM

The only useful change I found in this ROM was the garbage collector patch which was published some time ago in PEEK(65) [Vol 2, No 3 p 6 and Vol 2, No 6, p 8]. This was actually the first of these changes which I implemented.

BASIC 4 ROM

I found this to be very fruitful ground for cosmetic changes, partly because most of the big messages are included here and partly because the cold-start routine has so many possibilities for different values of parameters which it sets up. Also, by shortening some of the messages and taking advantage of some already free space, I found I could add some extra functions.

In the original ROMs, if you respond "A<cr>" to the "MEMORY SIZE" prompt, the response was apparently the author's name. I did not find that information essential to the use of Basic, so this was the first message to go, along with the supporting code which analyzes the "A" response:

```
$BD82 C9 41 CMP #$41 -> EA NOP
                        EA NOP
$BD84 F0 84 BEQ $BD0A ->EA NOP
                        EA NOP
```

This also frees the memory at $BD0A - $BD10 and $BE4E - $BE71, which I will use for other things later.

The messages "BYTES FREE" and the titling which follow seem unnecessarily wordy to me. I chose to shorten it to "Bytes":

```
$BE1D  8D -> 0A
$BE1F  BE -> BD


$BD0A  A9 -> 42
$BD0B  4E -> 79
$BD0C  A0 -> 74
$BD0C  20 -> 65
$BD0D  C3 -> 73
$BD0E  A8 -> 00
```

In my original ROM, there is a message (never used for anything, as far as I can tell) starting at $BE39 saying "WANT SIN-COS-TAN-ATN <cr><lf>". If anyone can enlighten me on the purpose of this message, I'll be happy to hear it. In any case, the entire area from $BE39 thru $BEE2 is now available for the remaining messages. I chose to use lower case because I like the appearance better, but nothing prevents you from changing the letters back to upper case (just AND any lower-case letter with $DF to get the upper-case equivalent in ASCII).

```
MEMORY SIZE ? -> Mem ?
$BD72  72 -> 39
       M  e  m
$BD39  4D 65 6D 00
TERMINAL WIDTH ? -> Width ?
$BDC3  7E -> 3D
      W  i  d  t  h
$BE3D 57 69 64 74 68 00
```

I chose to change the default terminal width to 255 to avoid some conflicts with printers with widths of 80 or 132 columns:

```
$BD45  48 -> FF
```

I changed the warm start vector slightly. In the original ROMs, the first operation after a warm start would yield an OM ERROR because the stack pointer is left in the monitor's stack area, which is off limits as far as the Basic interpreter is concerned. However, the error handler resets all the pointers, including the stack pointer, which then allows you to operate normally. Another minor inconvenience was that unless you really knew the Basic interpreter, there was no way of finding out just what statement was executing when you reset the system. The following patch answers both problems, returning "?xx ERROR IN <line number>" on a warm start. The <line number> tells which line was executing at the moment of the system reset.

```
$BE2F  74 -> 62
$BE36  6C 01 00 JMP ($0001)
    -> 4C 74 A2 JMP $A274
```

The area from $BE43 thru $BEE2 is now free because of the compression of the messages. The area from $BEE3 thru $BF2C is unused on this system but appears to be remnants of some support code for serial ports on some other OSI system. In any case, the addresses used for those ports would conflict with the monitor ROM used on the C1P, so this code is essentially useless, leaving the entire area from $BE43 thru $BF2C open for experimentation. In Part II, I will show how to add some useful functions in this area including hex to decimal and decimal to hex conversions, a screen clear (how many of

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those have you seen?), a PRINT AT feature, and a VARPTR function.

As far as I know, none of these changes will cause any problems with commercial software (or your own) except for the KEY function, and then only if the software explicitly uses LET. I have been deliberately sketchy on exactly how and why some of these changes work, partly to keep the size of this article down and partly in the hope that those of you who are interested will find enough information here to allow you to explore further on your own. Stumbling around the Basic interpreter has been something like an "adventure" game to me, with a bit more of a purpose. I hope you find it as interesting as I have.

"SPOOL"

by Norman Bollinger
3223 Suffolk Lane
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In this article we will reveal several of the jewels found in "BIGBAG" which is sold by "COMPUTER POWER" as advertised in PEEK (65) October through December 1981. We have heard it said that "a picture is worth a thousand words" and we know that a good idea is worth even more. The "SPOOL" program that comes with "BIGBAG" is one of those brilliant ideas. This program sets up disk buffer #7 in high memory and opens the #7 disk file so that prints or inputs will be sequential disk file buffered IO's. Now that doesn't sound all that great does it? But wait till it comes around and grabs you from behind. Then you'll have to chuckle at yourself and say "now I see it". The first evident thing that you can do is use this program to concatenate programs, but you already know how to do that with indirect buffers except that "SPOOL" automates that. So, very little manual work is required by the operator.

The second trick that is really neat, is using the IO port flags to output a dialogue at the console to both the console and a disk file, which you can later read back in and edit or concatenate with other text. This method was used to produce the documentation for "BIGBAG".

Here is how spool works:

The following dialogue, that shows you how to use spool, was created with spool, not written out longhand. Then the comments were edited in with the word processor.

```
A*IO ,42
this means output to port 7 (disk) and 2 (crt) simultaneously
A*RE BA

OK
RUN"SPOOL
SPOOL TO DISK #7
SPOOL REQUIRES A DISK WITH A SPOOLD FILE NOW
BEGIN SPOOL =Y
END SPOOL =N
? Y
BUFFER # 7 AT ADR. 21504

POKE 8993,64 TO INPUT FROM THE SPOOLD FILE AFTER YOU END SPOOL

OK
RUN"VTOC a program that comes with "BIGBAG" FIX VTOC NO DATA CHANGED

FILE NAME?TEST
OS65D3 0 12 vtoc from the demo disk
BEXEC*      20      21
WPOBJ       30      31
MENU        14      14
RESXXX      15      19
FREE2       22      26
WP          32      32
RESTWO      36      38
FREE4       33      35
SPOOL       27      27
SPOOLD      28      29
SEQLST      39      39
VTOC        13      13

FIRST TRACK OF FILE?

OK
Now here is how we terminate the #7 spooling

RUN"SPOOL
SPOOL TO DISK #7
SPOOL REQUIRES A DISK WITH A SPOOLD FILE NOW
BEGIN SPOOL =Y
END SPOOL =N

?N here is where POKE 8993,2 is appended to the disk file for basic program input reset to the keyboard

BUFFER #7 AT ADR. 21504
POKE 8993,64 TO INPUT FROM THE SPOOLD FILE AFTER YOU END SPOOL

OK
The above dialogue was completely captured with the spool program.
```

"A" at line 130 must be set up for your memory configuration.

To concatenate programs use the following procedure:

1. RUN "SPOOL" with "Y" to set up the buffers.

2. LOAD the program that has the desired code you want to move.

3. LIST #7,B,E were B=beginning stmt # and E= end stmt #.

4. RUN "SPOOL" WITH "N" to close the disk file and reset the pointers to the beginning.

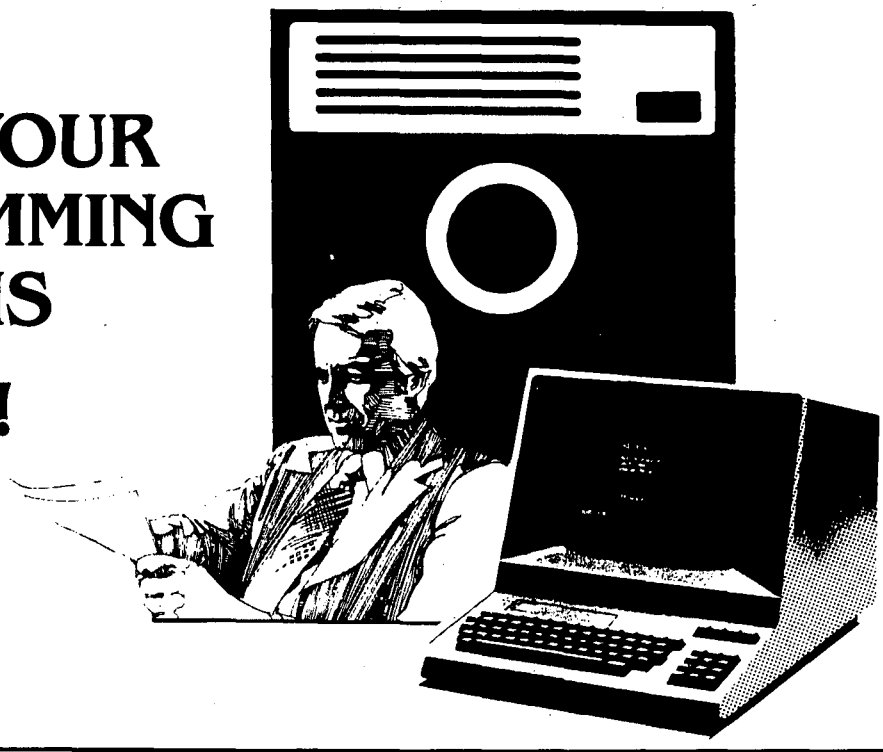
5. LOAD the program to receive the code.

6. Now with the disk inserted that has the "SPOOLD" file on it enter "POKE 8993,64" and here it comes.

Another very useful change to your BEXEC* would be the following upper memory disk buffers patch. Try it, you'll save the disk space too, and you won't have to remember to allocate those buffers before coding. But you will want to convert the old programs to the upper memory format and you can use "SPOOL" to do that.

```
1 REM COMPUTER POWER 3223 SUFFOLK LANE FALLSTON MD. 21047
5 PRINT "SPOOL TO DISK #7"
8 PRINT "SPOOL REQUIRES A DISK WITH A SPOOLD FILE NOW"
10 DEF FNU(U)=INT((U+1)/256)
11 DEF FNL(U)=U-INT(U/256)*256
100 PRINT "BEGIN SPOOL =Y":PRINT "END SPOOL = N"
105 INPUT R$
110 IF R$<>"Y" THEN 2000
120 REM A=ADR OF 1ST BYTE OF 2K BUFFER
130 A=18176
131 R=(PEEK(130)+256*PEEK(131))
135 PRINT "BUFFER # 7 AT ADR. ";A
136 IF R>A THEN PRINT "HIGH MEMORY MUST BE < ";A:STOP
150 PRINT "POKE 8993,64 TO INPUT"
160 PRINT "FROM THE SPOOLD FILE"
170 PRINT"AFTER YOU DO RESET"
180 DISK OPEN,7,"SPOOLD"
200 IL=9010
210 IH=9011
320 GOSUB 1000
325 POKE IL,TL
330 POKE IH,TH
340 POKE IH+1,TL:REM CUR TK IN BUFFER
350 POKE IH+2,0:REM DIRTY TK FLAG
400 BI=9213
410 BO=9238
415 REM INPUT/OUTPUT BUFFER ADDRESSES
420 AL=FNL(A)
430 AH=FNU(A)
440 POKE BI,AL
450 POKE BI+1,AH
500 POKE BO,AL
510 POKE BO+1,AH
520 POKE 9013,0
580 AL=FNL(A)
590 AH=FNU(A)
600 BS=A
610 BE=A+2048
620 BA=9006
```

TACKLE YOUR PROGRAMMING PROBLEMS HEAD ON!



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```
625 REM FIX BUFFER CONSTANTS
630 AL=FNL(BS)
640 AH=FNU(BS)
650 POKE BA,AL
660 POKE BA+1,AH
700 AL=FNL(BE)
710 AH=FNU(BE)
720 POKE BA+2,AL
730 POKE BA+3,AH
790 REM FIX BUFFER FOR WP
990 END
1000 DISK ! "CA 2E79=12,1"
1010 A$="SPOOLD"
1030 PN=11897
1050 GOSUB 10000
1060 REM THE SPOOLD FILE MUST BE ON
          THIS DISK
1100 TL=PEEK(I):TH=PEEK(I+1)
1110 RETURN
2000 PRINT#7,"POKE 8993,2"
2010 DISK CLOSE,7
2020 PRINT"#7 CLOSED AND RESET"
2025 PRINT"TO BEGINNING"
2030 GOTO 130
10000 REM
10010 REM FIND SPOOLD FILE IN VTOC
10030 FOR I=PN+6 TO PN+254 STEP 8
10040 IF PEEK(I-6)=35 THEN 10100
10050 C$="":FOR K=1 TO 6:C$=C$+CHR$
          (PEEK(I-7+K)):NEXT K
10060 IF C$=A$ THEN RETURN
10100 NEXT I
10110 PRINT"NO SPOOLER FILE"
20000 DEF FNU(U)=INT(U/256)
20005 X=PEEK(10950):POKE 8993,X:POKE
          8994,X
20010 DEF FNL(U)=U-INT(U/256)*256
20030 REM FIX #6 BUFFER TO 19000
20040 A=21504
20050 AL=FNL(A)
20060 AH=FNU(A)
20070 W=8998
20080 POKE W,AL
20090 POKE W+1,AH
20095 Y=9132
20100 POKE Y,AL
20110 POKE Y+1,AH
20115 Y=9155
20120 POKE Y,AL
20130 POKE Y,AH
20140 B=A+2048
20150 AL=FNL(B)
20160 AH=FNU(B)
20170 POKE W+2,AL
20180 POKE W+3,AH
20190 PRINT "FILE 6 BUF=";A
20195 GOSUB 20500
20200 A=A-1
20210 AL=FNL(A)
20220 AH=FNU(A)
20230 POKE 132,AL
20240 POKE 133,AH
20250 PRINT "MEM=";A
20300 RUN 2
20500 INPUT"WANT 2 DISK BUFFERS?
          Y/N";R$
20510 IF R$<> "Y" THEN RETURN
20600 A=A-2048
20610 AL=FNL(A)
20620 AH=FNU(A)
20630 W=9006
20635 POKE W,AL
20640 POKE W+1,AH
20650 Y=9213
20660 POKE Y,AL
20670 POKE Y+1,AH
20680 Y=9238
20700 POKE Y,AL
20710 POKE Y+1,AH
20720 B=A+2048
20730 AL=FNL(B)
20740 AH=FNU(B)
20750 POKE W+2,AL
20760 POKE W+3,AH
20770 PRINT "FILE 7 BUF=";A
```


OS-DMS/dBASE II a comparison

by Al Peabody

Part II

How Does dBASE II Do it?

dBASE II attacks the very same problems that OS-DMS does, so I won't go through the long-winded explanation again. It takes a slightly different approach. Basically, each process which is performed by a BASIC program in OS-DMS is performed by a machine language program in dBASE II: creating Master Files (called Primary Data Base Files in dBASE II); creating, loading and sorting Key Files (called Index Files); generating reports; sorting files; and so forth.

In addition, dBASE II has a couple of useful features OS-DMS doesn't have. Files called Report Format Files can be created, which contain all the answers to all the questions needed to generate a report from a Data Base File. Thereafter, you need only type REPORT FORM ABC (or whatever you decided to name your report format file) and the report is regenerated.

Immediate Mode

As that last statement implied, all the functions which correspond roughly to OS-DMS's Nucleus can be called up in an "immediate mode" in dBASE II, including editing files, indexing files, creating and printing reports, creating and deleting files, adding new records, etc. And it all happens FAST, being in machine language...well, it all happens pretty fast. Very fast if you have a hard disk. Not so very fast if you use floppies, since as we all know, CP/M, the operating system used by dBASE II, is a tad slow on floppy disks.

Command Files

The equivalent of application modules can be created in dBASE II by writing "Command Files," which you can either type in using a rudimentary word processing facility included with dBASE II, or using any other CP/M editor, including WordStar, Magic Wand, ED, etc.

Each line in a Command File can contain one line which could be typed in in the immediate mode, or a logical control command. These commands control repeated tasks and sequencing, and are much like the commands used in BASIC, COBOL and other high level languages.

Repeated Tasks

Repetition of the same task at several points in a program is handled in BASIC by GOSUB and RETURN. In dBASE II, we simply type DO Taskname, and dBASE II looks for another Command File "Taskname" and does what it says, then returns to where it was in the calling Command File and continues.

Conditional Tasks

Any programming language must be able to "branch," to go in one of several directions depending on the results of previous steps. BASIC uses IF...THEN statements. In dBASE II, the equivalent structure is IF...ENDIF. It works about the same, but allows the programmer to have the machine do any number of things IF the condition in the first statement is met.

Another neat feature is the ability to assign up to 64 values to "memory variables," which can be assigned in one Command File, and stay set until specifically changed or released, even though other Command Files are run. These memory variables can be tested in IF...ENDIF statements, and thus serve as sort of "pigeonholes" into which information can be stuck for later use by another program.

Special Commands

dBASE II has several commands, such as WAIT TO (VARIABLE NAME), ACCEPT, COPY, EDIT, FIND, INDEX, SAVE and RECALL which make the construction of menus and editor programs, and the modification of Data Base Files extremely simple. They allow you to display "forms" on the screen (without worrying about what type terminal will be used when the file is run), wait for single keystrokes or entire words or phrases, append records to files, copy whole files and structures, modify file structures and so forth, all without worrying in the least how dBASE II is actually

storing away the information.

Advantages

dBASE II has some nice advantages.

The command language is indeed more powerful and easier to write in than BASIC (though it might not seem so at first, especially if you have spent years learning how to write good BASIC).Once a file has been indexed (a "Key File" created), updating the Data Base (Master) File automatically and simultaneously updates the Key File, which can contain any number of fields.

The whole system is written in machine language. More or less. That is to say, as in BASIC, commands are executed in machine language, though, also as in BASIC, the Command Files dBASE programs) must be interpreted as you go along. The net result is that dBASE II is faster than OS-DMS, but not as much faster as their ads might tend to make you think.

Files can be shared with other CP/M programs. You can use dBASE II, for example, to type in and edit a name and address list, then use WordStar with MailMerge to write individual letters to everybody on the list.

Limitations

While the command language used by dBASE II is more powerful and inherently easier to use in producing structured programs (programs which do what they look like they do, and are easy to read and debug, as well as more likely to work right the first time), it does have its limitations.

The one I have found most galling is that there is as yet no provision for subscripted variables. This means you can't have A$(5) in dBASE II. Maybe I just need to learn different ways of doing things, but I surely miss array processing when I use dBASE II!

Samples Provided

The dBASE II disk comes with a number of sample Command Files which, while rather simple, do show you how to do such things as create menus, produce mailing labels, edit files, append to files, and produce reports more sophisticated than the simple report writer which is a standard part of the system.

In fact, a complete accounting system is included, designed for use by an advertising agency. Like OS-DMS's modules, the dBASE II "accounting system" is maddeningly simplified and inadequate. But it is included as a part of the basic package; you don't have to pay extra for it as you do for OS-DMS modules!

Documentation

The documentation provided with dBASE II is vastly superior to that currently provided with OS-DMS. It includes the usual PCIPU reference book, plus an attempt to explain what it all means and a sort of step-by-step tutorial actually written by one of the first users.

I didn't say the documentation is "good." It is merely barely adequate. But it is much better than OS-DMS's. And it certainly is hefty, hundreds of pages attractively printed (not 3rd generation Xeroxed) in a nice loose-leaf notebook with plastic divider pages (labeled with such informative tabs as "section III"!). Microcomputer documentation remains one of my pet gripes, and dBASE II hasn't done much to relieve it.

Which to choose?

Both systems have advantages and disadvantages. Both can do most jobs. I would personally make the choice based on which operating system you were going to try to integrate your DBMS with. If you will be using WordStar, T/Maker II and other CP/M programs, by all means, take dBASE II. If you will use WP-3, 65U level III time sharing and 65U-based accounting packages which use OS-DMS file structure, your only choice is OS-DMS (or Digital Technology's derivative OS-DMX).

In either case, either system sure beats

```
10 REM ACCOUNTING SYSTEM

20 .....
```

★

TERMINALS WITH PROGRAM FUNCTION KEYS AND OS65U VERSION 1.3

by; David A. Weigle
108 N. Missouri Ave.
Morton, IL 61550

One of the functions provided by the Line Editor and Extended Input Mode facilities of OS65U V1.3 is "Escape Control". Through use of this function one can develop flexible, sophisticated data entry programs providing a wide range of options for use by a terminal operator. The application program can be written to perform special processing or control functions when the operator enters a two-character combination consisting of ESCape and another character (e.g., ESC-A).

When the operator makes such an entry, the system control program (OS65U) leaves INPUT mode. The application program may then execute a special routine (or none at all) determined by the second character of the sequence keyed-in. For example, based on the second character entered, the program might: 1) substitute a default value for a data item instead of

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requiring the operator to key the data; 2) restart data entry for a transanction; or, 3) display prompting messages associated with the current data item.

If you have purchased or are considering purchasing a terminal which has Program Function Keys (PFK's), you probably want to use the PFK's instead of (or in addition to) Escape Control. Fortunately, support for PFK's is provided through the Escape Control function simply by changing the contents of one memory location.

Following activation of the Line Editor of Extended Input Mode, memory location 23732 contains a value of 27, the ASCII code for ESCape. This location is used to identify the character to be recognized as signalling that the Escape Control function is being invoked. The terminals with which I am familiar generate a two-character sequence when a PFK is depressed; the first (lead-in) character is the same for all PFK's on the terminal. Changing (POKEing) location 23732 to the ASCII value of the lead-in character of the PFK generated sequence permits the PFK's to be used.

After a PFK is depressed, location 23731 will contain the ASCII value of the second character of the sequence, as is the case when normal Escape Control is used. This memory location can be examined by the application program to determine which PFK was depressed.

★

64 CHR. VIDEO FOR THE C1P ON OSI 65D3.3

by David Larson
Charles Stewart
3033 Marvin Dr.
Adrian, MI. 49221

Numerous articles have been written in the past few months on the merits of the new system software now available for OSI Computers.

We have made the Progressive Video modification for a 64 Chr. line as have many C1 users, which gives the C2 display possibilities. In fact the systems are a C2P with the C1P keyboard once this modification has been made.

Our letter in the May issue of Peek(65) gave the pokes to give a true 32 Chr. line and

promised to share the 64 Chr. when available.

The following is a result of many hours of digging through the new code for screen drivers and gives a true 64 Chr. screen by 25 lines.

To use, type in the basic program and run. If all went well the cursor will be at the top of the display, the entire screen will be cleared and the DONE prompt will be displayed.

The ESC (1) control now gives a 32 Chr. display and clears the screen. If you have the switchable 32 by 64 Chr. display as detailed in the Progressive instructions these drivers will function correctly for you.

ESC (2) now gives the 64 Chr. option as well as clearing the screen.

To make these changes to DOS insert the system disk.

Type "EXIT": you should get the A* prompt.

Type "SAVE 13,1=3274/8".

The next time you boot this disk the changes will be implemented.

```
5REM 64 CHR VIDEO FOR 3.3 C1P
10READA:IFA=-999THENPRINT!
       (28)"DONE":END
20READB:POKEA,B;GOTO10:
30DATA13013,192,13014,230,
       13015,192,13016,214
40DATA13019,64,13022,0,13024,
       23,13025,21
50DATA13030,186,13031,6,13032,
       63,13034,63
60DATA13035,0,13036,209,13040,
       6,13041,63
70DATA13044,0,13045,209,13048,
       23,13049,63
80DATA13050,0,13051,209,13130,
       16,13605,4
90DATA13615,5,13622,222,13648,
       224,13652,8,-999

OK
```

DWO QUONG FOK LOK SOW's
WP6502 (tm), version 1.3a

by Frederick S. Schaeffer
84-55 Daniels St. #4f
Jamaica, NY 11435

DQFLS did it again...I've just received their newest version of what was for many an already good product, viz. WP6502 v 1.3a (hereafter referred to as "WP"). I've just been testing it and with very few exceptions, it works beautifully. The exceptions, I think, are possibly due to the types of printers I am using, rather than the software itself.

This WP differs from previous versions in a great many ways, and all are improvements for the better! For example, there's now a 65U File Clerk, (in place of the EXEC option). This is a menu-driven clerk, which really helps things out. Aside from the usual Load, Save, and Exit options, one can bring up a directory (horizontally configured rather than vertical), files can be renamed, deleted (though not repacked in 65U). It is said to work as well with floppies as with hard disks, and multiuser systems from 65U v 1.42 on down. The Clerk further automatically creates new files, and the copier utility can automatically create data, systems or complete back-up disks.

Now, three-digit codes are possible (and necessary) in such facilities as #L, #R, #T, #D, #N. This means that users with printers taking full-width paper (14 7/8 inch wide) can now use WP. The maximum right margin is 128. There's no more bottom page number (Doubt that anyone will miss it), and the line feed indicator (the big Hazeltine headache) which is stored, is now Dec. 13 (the commercial "at" sign). If you have old files that have to be fixed for use with this WP, you must of course change all 2 digit numbers to 3 digits where applicable, and you must also change the former line feed (` - depending on CRT) to the new line feed. Many keyboards have a separate line feed key.

The new install program is easier to deal with (since the default values are shown in all cases), and one can either change it or leave it. By striking the applicable key on your particular CRT for, let's say forward, non-destructive backspaces, command key, line feed, etc., etc., the WP program automatically remembers and this WP program will work well with your CRT. In my case, using a Televideo 910 (with the emulation options turned off), allows me to use WP with full left/right cursor control, line feed and tabbing, which makes operations easy and rapid.

The insert in the line edit mode now takes place by placing the cursor over the character following the place of insertion (previous versions required placing the cursor before the place of insertion); to me, this is easier. I guess this may be a matter of taste. Many of the printer selection functions may be placed in a default (install) state, so that one doesn't have to watch the menu too carefully. There is a possibility for character translation (printers) so that special character sets can be used. I can't tell you how that works, since I have no special character sets. The delete word/sentence/paragraph has been improved. Deletion now stops at any line feed. That's an improvement, because in older WP versions, when you accidentally did a Delete Paragraph and you didn't use the #P (but just skipped 2 lines) you could lose more than you intended to wipe out.

Leading blanks are now possible. These are about the main differences encountered. I am using a Parallel Centronics 737 (mostly for reports, since it is fast), and a Serial TEC C. Itoh 25cps Word-processing printer. The C. Itoh is supported by WP; the C737 isn't, although all micro-spacing printers are grouped in one category, and special features still work, more or less (usually more). On the Itoh, when selecting right margin justification, proportional spacing also must

be selected (#X#J commands), otherwise the Itoh will go crazy. The same is true for centering. Underlining does not work with Itoh (but again primarily because I have the Itoh's dip switches set for bi-directional printing; if I had it on serial printing, I could get underlining, using some #N (same as CHR$) commands. I prefer to leave the bi-directional printing the way it is). Haven't tried true proportional spacing on the C737 yet, because it isn't really that important to me (since I use the Itoh for all letter writing).

What's wrong with WP v 1.3a? (We all know so well that something is always wrong with new software, and sometimes it's a lot depending on the creator or manufacturer)... Well, I am pleased to say that very little is wrong with this WP. The only two annoying things I've found after several hours of use, is that on the Itoh (and again this could be due to the printer) a code "G 4" appears on the header line (where the page number prints) at the left margin when proportional/ justification is selected. This problem does not crop up on the C737, however. The other problem is somewhat more complicated...when you try to do a 'Block Review' (this happens on both printers), it overprints on the printer (but not on the CRT). I am able to by-pass this problem in the C737, because I wired a manual spacing selection switch to it, a long time ago. By setting it to double-space, the problem is solved. I suspect that the problem has something to do with the Install program where I have the "Printer Line feed" set to 10 (as default value). I changed it to '00' to see what would happen, and the problem went away (at single space) but then the spacing between paragraphs changed from 2 to 1... so I left it at 10. Incidentally, blank lines between paragraphs can be set (Install Program) either on 0 or 1.

In some review (can't recall where) comparing CP/M's WORDSTAR (tm) to DQ's WP6502 v 1.3, the analogy was made that WORDSTAR was the Cadillac in the field of wordprocessing and WP6502 was the Chevrolet. Well, there's no denying that WOODSTAR is good, but when considering DQ's WP6502 v 1.3a, I'd say WORDSTAR is analogous to a Lincoln and WP76502 v 1.3a became at least a Cadillac!

The price-tag of this WP is $300.00 but you're getting one heck of a nice word-processing package for it!

See letter p.20 - ED

★

CASSETTE CORNER

by David A. Jones
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Miami, FL 33165

It's been brought to my attention that the ROM chip select is not done the same on all 600 boards. Mine is a REV B and has 02 clock going to pin 21 of U9-U12 via W1. Evidently some boards exist that have 5+v already on pin 21 so if you ran into trouble following my instructions in the April column, my apologies. If you're planning on doing the mod later you would do well to check the PC artwork first. Also, I understand that you may leave 02 connected to pin 21 provided you aren't running faster than the original 1 MHz. I agree that it should work but haven't tried it myself as I was running at 1.3 MHz at the time I installed the EPROM in my board and now that I'm back at 1 MHz I don't want to rewire my board just to find out.

The reason I'm back at 1 Mhz is Cassette Corner has gone disk. I was able to pick up a

610 board and drive on the used market at a price I couldn't refuse. A lot of study and some very late hours later I was rewarded with the OS65D prompt. Quite a nice feeling after buying the drive in "as is" condition. The only problems encountered were a faulty RAM chip and a bad cable. Some of the expansion I had previously installed to support EPOS (EPROM Operating System) had to come out as did the 1.3 MHz modification. 5 1/4 inch disk systems read and record data at 125 KHz which is 1/8 of 1MHz not 1/8 of 1.3 MHz. Some variance is allowed for, so we can get by with .983040 MHz which we commonly refer to as 1 MHz.

Researching 2 years of PEEK(65) back issues to sort out OS65D information I previously ignored is just like receiving a free subscription to a new magazine. There's a lot of information in those back issues for me to absorb in the next few weeks.

A BOOK

I've just had a chance to peruse a copy of "The First Book of OSI" by Williams and Dorner. The book has been around since March 1980 and I wish I had seen it sooner. Somewhere along the way I thought I was too advanced for something called "A First Book" so I never bought it, but just about everything I discovered on my own the hard way, they have covered the easy way. And it's all in one nice neat book. Thumbing through the back issues, I see that the book was reviewed and recommended in the May 1980 issue of PEEK(65) so I won't say more except that there's more in the book than you'll be able to fnd in a year of Cassette Corner.

CONTROL CHARACTERS

So often we see where such and such a program uses a control character to call a certain routine or function with only one keystroke. While I appreciate the intent, I feel everyone would benefit if the ASCII standard were adhered to more strictly. If you have to interface with another system that recognizes control L as the form feed that it is, or expects a one or two character command after an escape, then it can be pretty nerve racking remembering what to do when there are multiple definitions to keep track of, not to mention the lack of response or loss of data that could occur. There are quite a few seldom or never used characters that can substitute nicely. HEXDOS uses control all by itself to freeze a program and makes you use repeat for the control C function. Strange!

The following chart is a list of the control characters contained in the 127 character ASCII set with the most common usage of each listed in column 3. Omitted are some that don't apply to the majority of our systems. Start paper tape reader, etc. Column 2 has the abbreviations and the use associated with communications, (not within the scope of this article) and column 4 is a list of the functions as implemented on my system. I'm not recommending that anyone adopt the same use as I did, only that a little thought be put into selection and try not to assign additional uses to keys that are presently well defined. Note that OS65D uses control P to toggle the printer flag and control X is used with indirect files.

C.	CHAR	ABRV	STANDARD USAGE	EPOS USAGE
A		SOH		CLEAR SCREEN
B		STX		INPUT FROM SERIAL PORT
C		ETX	SUSPEND TASK	
D		EOT		CURSOR DOWN
E		ENQ		EXIT PRESENT ROUTINE
F		ACK		MEMORY FILL
G		BELL	BELL	
H		BS	BACK SPACE	CALL HEX CONVERTER
I		HT	HORIZONTAL TAB	
J		LF	LINE FEED	
K		VT	VERTICAL TAB	
L		FF	FORM FEED	
M		CR	CARRIAGE RETURN	
N		SO		CALL AUTOBASIC
O		SI	SUPPRESS/RESUME OUTPUT	
P		DLE		TOGGLE PRINTER FLAG
Q		DCI	RESUME OUTPUT (XON)	
R		DC2	PRINT INPUT BUFFER	
S		DC3	SUSPEND OUTPUT (XOFF)	
T		DC4		CALL TERMINAL ROUTINE
U		NAK	CLEAR INPUT BUFFER	CURSOR UP
V		SYN		FORMAT 24 CHAR SCREEN
W		ETB		DUMP TERMINAL BUFFER
X		CAN		CALL EXTENDED MONITOR
Y		EM		FORMAT 64 CHAR SCREEN
Z		SUB	TERMINATE INPUT/FILE	
<				CURSOR LEFT
>				CURSOR RIGHT
/				ENTER CHAR UNDER CURSOR

★ ★ ★

ANNUAL CALENDAR

by: Jack Watts
1925 Kalakaua Ave. Apt.2703
Honolulu, HI 96815

Several people have worked on this program. One is Mr. Dean Beazly who set up a monthly calendar and another is Mr. John Henson who took care of the leap year problem.

```
10 CLEAR: REM    3U CALEND - CALENDAR
20 REM JACK WATTS, 1925 KALAKAUA AVE APT 2703, HONOLULU HI 96815
210 A=0: N=32: DIM A$(N),B$(N),C$(N)
310 INPUT"ENTER YEAR IN FOUR DIGITS";YR
410 Y=YR-1700: LD%=(Y+100)/400: LD%=(LD%+(Y/4))-INT(Y/100): LD=LD%
910 FOR LN=1 TO 5
1010 : TB=24
1110 : FOR L1=2 TO 5
1210 :  D$=MID$(STR$(YR),L1,1)
1310 :  D=VAL(D$)+1
1410 :  ONDGOSUB7510,8010,8210,8610,8910,9310,9710,10110,10410,
                                                        10710
1510 :  IF D=2 THEN TB=TB+4: GOTO 1710
1610 :  TB=TB+8
1710 : NEXT L1: PRINT
1810 NEXT LN: PRINT: PRINT
2120 IF (YR/4=INT(YR/4)) THEN FD=1
```

digital technology

BUS-II LEVEL I BOOKKEEPING & ACCOUNTING SYSTEM

The BUS-II turn-key multi-client accounting package is the leading OSI business software package. BUS-II Version 32 includes five principle modules:

	Inst. Price	List Price
GENERAL LEDGER	$1200	$599
ACCOUNTS RECEIVABLE (a)	1000	599
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PAYROLL (no extra charge for optional versions)	1200	799

01 - STANDARD MULTI-STATE OPERATION
02 - CPA FIRMS & SERVICE BUREAUS
03 - RESTAURANTS
04 - COMMISSION SALES
05 - CONTRACTOR'S JOB-COST ACCOUNTING

The Accounts Receivable, Accounts Payable, and Order Entry W/ Inventory are completely interactive with the BUS-II General Ledger. Two optional specialized packages (completely interactive) are also available.

CPA EXTENSIONS (see below)
POINT-OF-SALE TERMINAL W/ INVENTORY (see below)

The BUS-II CPA EXTENSIONS Package provides special features for accountants and bookkeepers. The POS-1 Point-of-Sale Terminal package enables the operator to use the computer system's video terminal as an on-line "electronic cash register."

Note: BUS-II operates on floppy-disk or hard disk-based systems running the OS-65U operating system (single-or multi-user). Multi-client use can accommodate any number of client companies on floppy disk systems or hard disk system with H/D/E (required for hard disk use). BUS-II LEVEL I files are limited in size for floppy disk back-up; floppy disk operation continues in case of hard disk failure.

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Users of other business software packages who wish to upgrade to Digital Technology's full-function BUS-II BOOKKEEPING & ACCOUNTING SYSTEM can, in many cases, "trade in" their old, unuseable, or unsupported software for full rebate of the original purchase price (up to $750.00). This "SOFTWARE EXCHANGE" offer includes virtually all of the previously-available OSI business software packages. Contact Digital Technology or your dealer for more information.

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BUS-II LEVEL II is designed for much larger businesses. Expanded file size and special operations allow virtually unlimited numbers of accounts and transactions. BUS-II LEVEL II requires BUS-II LEVEL I. Minimal back-up is data cassette (tape) or floppies--although multiple Winchester disk operation is recommended (provides ability to continue computerized bookkeeping functions in case of hard disk failure.) H/D/E Hard Disk Executive is required.

	Inst. Price	List Price
GENERAL LEDGER (c) (d)	$	$399
ACCOUNTS RECEIVABLE (c) (d)	600	399
ACCOUNTS PAYABLE (c) (d)	600	399
ORDER ENTRY W/ INVENTORY (c) (d)	600	399

CPA EXTENSIONS PACKAGE

CPA EXTENSIONS is designed for public accounting firms. A number of special operations are provided: "bankers" Balance Sheet and Profit and Loss statement with summarization and consolidation options, Statement of Changes in Financial Position, Statement of Changes in Components of Working Capital, Cash Flow Analysis, Departmentalized Sales Analysis, Asset Depreciation Schedule (compatible with TAXMAN-1040), and Loan Amortization Schedule. In addition, a pre-processed or "after-the fact" payroll system is provided.

CPA EXTENSIONS is interactive with BUS-II 32 BOOKKEEPING & ACCOUNTING SYSTEM

CPA EXTENSIONS (a) Inst. Price $2400 List Price $1500

POINT-OF-SALE TERMINAL

POS-1 is an on-line multi-store point-of-sale terminal program with integrated inventory designed for cash register emulation. POS-1 controls cash drawer and ticket printer (or system printer). Automates taxable or nontaxable sales, cash transactions, and credit sales (with verification operations). POS-1 also allows the use of industry-standard bar code readers with the point-of-sale terminal system through a "Siamese port-- on the C2 or C3 CPU card. (Extra serial port NOT needed except in multi-user operation.) Configured for industry-standard RS232 bar code "wand" (INTERMEC) or "window" (SPECTRA-PHYSICS).

POS-1 is interactive with the BUS-II V 3.1 BOOKKEEPING & ACCOUNTING SYSTEM.

POS-1 POINT-OF-SALE TERMINAL (a)(b)
Inst. Price $1600 List Price $1199

TAXMAN-1040 PERSONAL INCOME TAX PREPARATION

TAXMAN-1040 is designed for tax practitioners and public accountants. TAXMAN-1040 is the leading tax package for OSI micorcomputers--the package has been installed on OSI, Hewlett-Packard, DEC and IBM systems. Designed and supported by CPA tax experts. This package automatically prepares FORM 1040 and 32 schedules. Support includes annual forms, tax tables, and computational revisions in accordance with Federal Tax Law changes.

TAXMAN-1040 Inst. Price $3600 List Price $2399

H/D/E HARD DISK EXECUTIVE

Digital Technology's implementation of H/D/E is the answer to AMCAP's HDM. Digital Technology's H/D/E provides user functions not found on HDM of similar products: ability to copy from any user "system" to another; automatic recovery in case of "back-up to floppy" or "restore from floppy" utility failures, allowing the user 3 options: (1) ignore error, (2) abort to menu, (3) try again; use of both "A" and "B" floppy drives to back-up hard disck files; and automatic back-up diskette initialization. H/D/E operates on any OSI Winchester disk system from 7 - 80 megabytes. Re-use of hard disk space is provided. Superior to AMCAP's hard disk manager in every respect (and Digital Technology software does not self-destruct).

NOTE: H/D/E is required when installing any Digital Technology business applications packages on OSI hard disk systems.

H/D/E HARD DISK EXECUTIVE List Price $399

OS-DMX DATABASE MANAGEMENT SYSTEM

Command-oriented OS-DMS compatible database management system. OS-DMX operates under the OS-65U V1.2 operating system (single- or multi-user). Features such as control files, extensive operating commands and the innovative HELP function, make this one of the most usable--as well as powerful--systems available for microcomputers. OS-DMX may be used instead of, or in addition to, OS-DMS Nucleus, Query, Sort; OS-DMX will replace virtually all of the specialized OS-DMS modules-- and in most applications will provide greatly improved performance.

OS-DMX Database Management System buyers will receive (no extra charge) a number of "extras" previously sold separately:

DMX-MAIL	Mailing List Management (FEB 82)
DMX-STAT	Comprehensive Statistical Analysis package (JULY 82)
DMX-COPY	Edit Database Structure after the fact (FEB 82)
DMX-MERGE	File Merge Operation (FEB 82)
DMX-TUTOR	450-Pg Tutorial w/ Demo Data Diskette (AVAILABLE)

In addition, DMX-SORT operations will be upgraded to machine-code sorting for faster operation. There will be no need to purchase high-speed sort programs separately.

OS-DMX DATABASE MANAGEMENT SYSTEM
Inst. Price $1600 List Price $1199

BISYNC-80/HASP

BISYNC-80/HASP is a full-function Multileaving Workstation package which allows communication with any remote CPU that supports a HASP Multileaving Workstation, and, as such, is ideally suited to Remote Job Entry applications.

OS-BISYNC-80/HASP (e)(f) List Price $1195

BISYNC-80/3270

BISYNC-80/3270 is a full-function IBM 3270 terminal emulator which allows the microcomputer to communicate over point-to-point telephone lines with any IBM S/360, S/370, or S30xx CPU that provides standard IBM support for one of the following:

IBM 3275 Model 2
IBM 3271 Model 2 or control unit w/ attached 3277 Model 2
IBM 3284 or 3286 printer

OS-BISYNC-80/3270 (e)(f) List Price $895

BISYNC-80/3780

BISYN-80/3780 is a full-function IBM 2780/3780 emulator allowing the microcomputer to communicate over point-to-point telephone lines with any CPU or device that provides standard IBM support for:

IBM 2780 Models 1, 2, 3 or 4
IBM 3780 w/ or w/o 3781 card punch
IBM CPU to CPU BSC communications

OS-BISYNC-80/3780 (e)(f) List Price $895

BISYNC-80/ASYNC

BISYNC-80/ASYNC is a full-function asynchronous communications package which allows microcomputers to communicate asynchronously with a mainframe or other microcomputers. This package is an ASYNC adaptation of BISYNC-80/3780 terminal emulation program, providing asynchronous communications at 75 to 9600 baud, using full IBM BISYNC protocol.

OS-BISYNC-80/ASYNC (e)(f) List Price $195

OS-BISYNC-80 SYNCHRONOUS INTERFACE ASSY List Price $395

NOTE: The prices shown in this catalog are estimates only; contact your OSI dealer for quotations. The "suggested installed price" reflects a typical business installation and includes reasonable allowance for software installation, minor program adaptation or customization, operator training, dealer support, back-up, etc. The "reference" or "list" price reflects a base price for the software for comparison purposes, exclusive of dealer installation and support.

Digital Technology, Inc., is the largest independent supplier of OSI software with hundreds of business packages in use around the world. Digital Technology software is sold by a growmg number of conscientious OSI dealers and OEMs. Every package is backed by the finest support program in the microcomputer industry. All "bugs" are fixed free of charge. Updates (fixes to bugs, minor enhancements, new product announcements) are provided to all dealers and licensed users free of charge. And upgrades to new versions are encouraged (at nominal charge).

Digital Technology's software is user-obtained. In fact, no one else provides such expansive features as on-line documentation, idiot-proof prompting, and operator's manuals that are comprehensive, detailed, and accurate.

All Digital Technology software systems allow the operator to "set" the programs to the type of video terminal and printer used. The operator selects the terminal and printer types from the list provided in the "TERMINAL & PRINTER OPTIONS" program. Screen formatting and printer control are provided automatically yet may be redefined through user subroutines.

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REQUIREMENTS

(a) BUS-II LEVEL I or LEVEL II G/L req'd
(b) BUS-II LEVEL I or LEVEL II A/R req'd
(c) Corresponding BUS-II Level I module(s) req'd
(d) H/D/E req'd
(e) C3 CPU W/ 56K RAM & OS-CP/M or Lifeboat Associates CP/M req'd
(f) SYNCHRONOUS INTERFACE ASSY req'd

```
2130 IF (YR/100=INT(YR/100)) AND (YR/400<>INT(YR/400)) THEN FD=0
2210 FOR M=1 TO 12
2220 : FL=0: S=0: IF M=4 OR M=7 OR M=10 THEN PRINT: PRINT
2410 : IF M=1 OR M=4 OR M=7 OR M=10 THEN GOSUB 11010: GOSUB 6710
2510 : IF M<2 AND FD=1 THEN LD=LD-1: DA=DA-1
2620 : DA=LD+(Y*365)+5
2630 : IF M=2 AND FD=1 THEN LD=LD+1
2710 : IF M>10 THEN 3010
2810 : ON M GOSUB 5010,5110,5210,5310,5410,5510,5610,5710,5810,5910
2910 : GOTO 3310
3010 : ON M-10 GOSUB 6010,6110
3310 : WK%=DA/7: WK%=DA-(WK%*7): B=WK%: IF M=2 THEN E=E+FD
3410 : FOR L=0 TO B: A$(L)="": NEXT L
3420 : IF M=1 OR M=4 OR M=7 OR M=10 THEN 3450
3430 : IF M=2 OR M=5 OR M=8 OR M=11 THEN 3460
3440 : IF M=3 OR M=6 OR M=9 OR M=12 THEN 3470
3450 : FOR L2=1 TO E: A$(L2)=STR$(L2): NEXT L2: E1=E: GOTO 3510
3460 : FOR L2=1 TO E: B$(L2)=STR$(L2): NEXT L2: E2=E: GOTO 3510
3470 : FOR L2=1 TO E: C$(L2)=STR$(L2): NEXT L2: E3=E: GOTO 3510
3510 :  FOR W=L TO 7
3710 :   A=A+1: A$(L)=STR$(A): B$(L)=STR$(A): C$(L)=STR$(A)
3720 :   IF A>E THEN S=1
4010 :   IF S=1 THEN A$(L)=" ": B$(L)=" ": C$(L)=" "
4110 :   IFM=2ORM=5ORM=8ORM=11THENPRINTTAB(W*3+21)B$(L);:L8=A:GOTO4410
4210 :   IFM=3ORM=6ORM=9ORM=12THENPRINTTAB(W*3+45)C$(L);:L9=A:GOTO4410
4310 :   PRINT TAB(W*3-3)A$(L);: L7=A
4410 :   L=L+1
4510 :  NEXT W
4530 : IF M=3 OR M=6 OR M=9 OR M=12 THEN L=1: FL=1: A=L7: PRINT
4540 : IF FL=1 THEN M=M-2: S=0: E=E1: FL=FL+1: IF A<=E THEN 3510
4560 : IFFL=2THENM=M+1:S=0:L=1:E=E2:FL=FL+1:A=L8:IFA<E THEN 3510
4570 : IF FL=3 THEN M=M+1: S=0: L=1: E=E3: A=L9: IF A<=E THEN 3510
4610 : L=1: A=0
4710 NEXT M
4810 PRINT: PRINT: PRINT: END
5010 DA=DA: E=31: RETURN
5110 DA=DA+31: E=28: RETURN
5210 DA=DA+59: E=31: RETURN
5310 DA=DA+90: E=30: RETURN
5410 DA=DA+120: E=31: RETURN
5510 DA=DA+151: E=30: RETURN
5610 DA=DA+181: E=31: RETURN
5710 DA=DA+212: E=31: RETURN
5810 DA=DA+243: E=30: RETURN
5910 DA=DA+273: E=31: RETURN
6010 DA=DA+304: E=30: RETURN
6110 DA=DA+334: E=31: RETURN
6710 TB=1
6810 FOR L1=1 TO 3
6910 : PRINT TAB(TB)"S  M  T  W  T  F  S";: TB=TB+24
7110 NEXT L1: PRINT: RETURN
7510 IF LN=1 OR LN=5 THEN PRINT TAB(TB)"0000";: RETURN
7610 PRINT TAB(TB)"0  0";: RETURN
8010 PRINT TAB(TB)"1";: RETURN
8210 IF LN=1 OR LN=3 OR LN=5 THEN PRINT TAB(TB)"2222";: RETURN
8310 IF LN=2 THEN PRINT TAB(TB)"   2";: RETURN
8410 PRINT TAB(TB)"2";: RETURN
8610 IF LN=1 OR LN=3 OR LN=5 THEN PRINT TAB(TB)"3333";: RETURN
8710 PRINT TAB(TB)"   3";: RETURN
8910 IF LN=1 OR LN=2 THEN PRINT TAB(TB)"4  4";: RETURN
9010 IF LN=3 THEN PRINT TAB(TB)"4444";: RETURN
9110 PRINT TAB(TB)"   4";: RETURN
9310 IF LN=1 OR LN=3 OR LN=5 THEN PRINT TAB(TB)"5555";: RETURN
9410 IF LN=2 THEN PRINT TAB(TB)"5";: RETURN
9510 PRINT TAB(TB)"   5";: RETURN
9710 IF LN=1 OR LN=2 THEN PRINT TAB(TB)"6";: RETURN
9810 IF LN=3 OR LN=5 THEN PRINT TAB(TB)"6666";: RETURN
9910 PRINT TAB(TB)"6  6";: RETURN
10110 IF LN=1 THEN PRINT TAB(TB)"7777";: RETURN
10210 PRINT TAB(TB)"   7";: RETURN
10410 IF LN=1 OR LN=3 OR LN=5 THEN PRINT TAB(TB)"8888";: RETURN
10510 PRINT TAB(TB)"8  8";: RETURN
10710 IF LN=1 OR LN=3 OR LN=5 THEN PRINT TAB(TB)"9999";: RETURN
10810 IF LN=2 THEN PRINT TAB(TB)"9  9";: RETURN
10910 PRINT TAB(TB)"   9";: RETURN
11010 TB=1
11210 FOR L1=1 TO 3
11310 : READ M$: PRINT TAB(TB)M$;: TB=TB+24
11510 NEXT L1: PRINT: RETURN
11610 DATA JANUARY,FEBRUARY,MARCH,APRIL,MAY,JUNE,JULY,AUGUST,SEPTEMBER
11710 DATA OCTOBER,NOVEMBER,DECEMBER
12000 REM YEARS 1752-2327 ARE ALLOWABLE INCLUDING LEAP YR CONSIDERATION      THE END
```

LETTERS

ED:

First of all, thank you for telling me where I can find more information on a data separator. Hopefully, this will help to get my disk going soon. Second, with regard to information on adding a serial interface, this, as well as other pertinent articles has been covered extensively in the AARDVARK JOURNAL, vol. 2, no. 6.

I am relatively new to computers, having bought my machine in January of 1980. At the time, I had no knowledge of BASIC or what these infernal machines could do but thought I had better learn. It has been the most meaningful thing that has happened to me in my 39 (and holding) years. For the last year, I have wanted to learn something of machine language programming, but any books I have tried to read have been way over my head. Could some of our experienced people recommend something to get me started?

Thank you, Yasuo, for your information regarding the locations of color in CEGMON, and for your many other contributions in this journal.

I use for a monitor an old pong game which also has an audio amplifier. This amplifier will work with the DAC output of my C4, but not with the tone generator output. Any ideas why? An amplifier on a tape player I use, accepts and amplifies both.

I have keyed in the COMPUTERCUBE program from vol. 3, #3, but am not sure what the cube is supposed to look like. Could you publish a sketch of what the cube looks like so I could adapt it for my C4?

Listed below is a program which generates a Punnett square for monohybrid genetic crosses, asks for parents genotypes, and fills in these boxes. Values are for C4P with CEGMON in 32 x 32 format.

```
1 POKE56832,0
10 PRINTCHR$(30):REM CEGMON
   CLS-FORSYNMON FORX=1TO32
   :?:NEXT
15 ST=53514:REM UPPER LEFT
   CORNER OF BOX
20 POKEST,210:FORR=ST+1TOST+5:
   POKER,135:NEXT:POKEST+6,
   210
30 FORR=ST+7TOST+10:POKER,135:
   NEXT
40 POKEST+11,207
50 POKEST+64,136:POKEST+70,136
   :POKEST+75,143
60 POKEST+128,209:FORR=ST+129
   TOST+133:POKER,128:NEXT:
   POKEST+134,209
70 FORR=ST+135TOST+138:POKER,
   128:NEXT:POKEST+139,208
80 POKEST+192,136:POKEST+198,
   136:POKEST+203,143
90 POKEST+256,136:POKEST+262,
   136:POKEST+267,143
100 POKEST+320,209:FORR=1TO5:
   POKER+ST+320,128:NEXT
110 POKEST+326,209
120 FORR=1TO4:POKEST+326+R,128
   :NEXT:POKEST+331,208
200 P(1)=ST-125:P(2)=ST-119:
   P(3)=ST+62:P(4)=P(3)+192
210 O(1)=ST+66:O(2)=ST+72:
   O(3)=O(1)+192:O(4)=O(2)+
   192
215 FORR=1TO10:PRINT:NEXT
220 INPUT"MOTHER'S GENOTYPE";A$
221 REM FOR SYNMON USE
   AARDVARK INPUT WITHOUT
   SCROLL
222 REM POKE11,0:POKE12,253:
   X=USR(X):A$=CHR$(PEEK
   (531))
223 REMX=USR(X):Q$=CHR$(PEEK
   (531)):A$=A$+Q$:Q$=""
230 B=ASC(RIGHT$(A$,1)):A=ASC
   (LEFT$(A$,1)):IFB<ATHENM=A
   :A=B:B=M
240 POKEP(1),A:POKEP(2),B
259 REM SEE 221-223
260 INPUT"FATHER'S GENOTYPE";A$
270 D=ASC(RIGHT$(A$,1)):C=ASC
   (LEFT$(A$,1)):IFD<CTHENM=C
```

```
    :C=D:D=M
280 POKEP(3),C:POKEP(4),D
290 IFA<CTHENPOKEO(1),A:
    POKEO(1)+1,C:GOTO310
300 POKEO(1),C:POKEO(1)+1,A
310 IFB<CTHENPOKEO(2),B:POKEO
    (2)+1,C:GOTO330
320 POKEO(2),C:POKEO(2)+1,B
330 IFA<DTHENPOKEO(3),A:POKEO
    (3)+1,D:GOTO350
340 POKEO(3),D:POKEO(3)+1,A
350 IFB<DTHENPOKEO(4),B:
    POKEO(4)+1,D:GOTO370
360 POKEO(4),D:POKEO(4)+1,B
370 REM REST OF PROGRAM WILL
    GO HERE
```

Stephen P. Rydgig
Collinsville, IL 62234

* * * * *

ED:

Several months ago you carried an announcement that a board would soon be available to let OSI users run standard CPM on their machines. It is now available from the Software Federation as the PROXY-80, and I am using one to write this letter to you. The board, which is meant to replace the 505 or the 510 and 470 boards in an OSI machine, comes with version 2.2 of CPM and with WordStar and MailMerge. The package isn't cheap; total cost is $825. But that isn't all that far from the retail prices of the software alone. The board is not available by itself.

The board comes with the standard documentation from Digital Research and an additional booklet from D & N Micro Products, the manufacturer of the board. The D & N information contains schematics for the board and very explicit information on how to install CPM and set up the printer so that CPM will use the standard OSI printer interface boards. Installing the board was trivial; I removed the 505 board and took off the Molex connector for the terminal cable and the paddle board which terminates the disk drive cable. They go back on the PROXY-80 board in exactly the same way. CPM installation would have been just as easy, except that I managed to miss an asterisk in a command line. The second try worked fine.

This board will allow an OSI machine to run either single or double density. The software for either system is included on the master disk. In order to run double density it is necessary to make two cuts and install a jumper on the paddle board. After this is done, the machine runs double density, but it is still possible to copy a single density disk in drive B onto a double density disk in drive A.

Moving boards is a pain, so I have installed two switches on the front panel which let me leave both boards in the machine all the time. One of the switches selects boards, the other selects single or double density for CPM.

At this point, the PROXY-80 board is available for serial machines with static memory only. I asked about running other machines with dynamic memory and was told that timing problems may show up because each dynamic board has its own refresh circuitry. The PROXY-80 will run with about half of the dynamic boards it is tried on. If someone with dynamic memory wants one of these boards, it would be best to try one in the machine first to see if it works.

WordStar comes with the standard (formidably sized) Micropro manual. When I got ready to install it, I used the wrong way to interface the printer (of course). In spite of what the manual says, a Spinwriter will run fine at 1200 baud as the LST logical device without a communications protocol. If you try to build the extra cable jumper that Micropro recommends, that will work fine with CPM but it won't let the printer run under OS-65U. [Dick McGuire of DBMS, INC. has designed a simple hardware handshake for the CA-10X and serial NEC which works fine with CP/M and 65U - see PEEK (65) FEB. 1980 or OSI Technical Newsletter #29.]

The CPM is standard IBM format, not OSI's. The CBASIC that I bought said that it was produced for a Dynabyte machine, but it runs fine on mine. [Altos disks and Lifeboat's format A-1 work fine, too - Al]

Extra instructional material is almost absolutely necessary. I bought and read three books on CPM before I started using the system and I'm glad I did. Of the three, the one that I found most useful (and most advanced) was the Osborne book by Thom Hogan.

The board can be obtained from any Software Federation dealer, including me. [Also available from DBMS, INC,.] If anyone wants to ask questions about the system, I

can usually be reached at home on Monday, Wednesday, and Friday nights or on weekends. Phone is 312/695-8962. I'll be happy to share what I have learned so far.

Since buying the PROXY-80, I find that several of my friends are very interested in it. One, who is a writer, spends quite a bit of time at my house now, using the computer to write his manuscripts. He is also spending a good bit of time scheming about how to get one of his own. A week ago I showed the board and WordStar to two of the secretaries at a company that I do some programming for. Half an hour later, as I was leaving, I was told to order one for them and to schedule some time to teach the secretaries how to use it.

The only problem that has come up is that my wife will no longer use a typewriter and expects me to relinquish the computer whenever she wants to use it. I can feel multi-user coming on.

Loren Weaver
Elgin, IL 60120

* * * * *

ED:

RE: Fred Schaeffer's review on page 13

We really appreciate Fred's comments on our new baby: WP6502 V1.3a. It's mainly due to persons like Mr. Schaeffer and many others who send us their comments and suggestions that WP6502 has achieved its state of being good, solid software. We do wish to comment on a couple of points, though, which may be misleading:

Fred says that our line-feed indicator is now character number 13 (right!) which is the '@' sign (wrong!). The line-feed indicator shows up on the screen as "@" (character 64D) but is truly character 13 (return).

Mr. Schaeffer's problems with the over-printing lines is, indeed, due to the fact he has changed the line feed to be '00' or null. If at all possible, this should be left at '10' and the printer should be set so that it does not generate an automatic line feed every time it sees a return.

By the way, we did raise the price of 65U-WP6502 to $300 because we added the File Clerk which takes all the fuss out of file handling. 65D-WP6502 (which also has File Clerk) still costs $250. We'll upgrade 65D users to 1.3a for $25, 65U updates are $75. (Try that with another word processing company... "update" usually means "buy another one".)

Fred Beyer
DQFLS, New York, NY.

* * * * *

ED:

Here are the changes necessary to speed up the stepping rate of the eight inch disk drives under 65D 3.2.

The zero page location that contains the delay variable for the step rate is $00EF. The value normally found there is #$08. Using the Extended Monitor try decreasing this value and then do a few disk calls to see how much faster the drive steps between tracks.

The Siemens drives on our C4P DF can handle a value of #$03 in location $00EF with no problems and actually made the stepper motor quieter.

If you want to make the changes permanent to your disk then follow the procedure outlined below. I chose to use the value of #$04 just to be on the safe side.

```
A*EM
EM V2.0
:EXIT
A*CA 0200=01,2
A*GO 0200

-  DISKETTE UTILITIES -

SELECT ONE:
1) COPIER
2) TRACK 0 READ/WRITE
? 2

TRACK ZERO READ/WRITE UTILITY

COMMANDS:
Rnnnn - READ INTO LOCATION
     nnnn
Wnnnn/gggg,p-WRITE FROM nnnn
     FOR p PAGES WITH gggg AS
     THE LOAD VECTOR
E - EXIT TO OS-65D
COMMAND? R4200

TRACK ZERO READ/WRITE UTILITY

COMMANDS:
RNNNN - READ INTO LOCATION
     nnnn.
Wnnnn/gggg,p - WRITE FROM nnnn
     FOR  p PAGES WITH gggg AS
     THE LOAD VECTOR
E - EXIT TO OS-65D
COMMAND? E
A*RE EM
EM V2.0
:@42BA
42BA/08 04
:@494A
494A/0E 02
:EXIT
A*GO 0200

- DISKETTE UTILITIES -

SELECT ONE:
1) COPIER
2) TRACK 0 READ/WRITE
? 2

TRACK ZERO READ/WRITE UTILITY

COMMANDS:
Rnnnn - READ INTO LOACATION
     nnnn.
Wnnnn/gggg,p - WRITE FROM nnnn
     FOR p PAGES WITH gggg AS
     THE LOAD VECTOR
E - EXIT TO OS-65D
COMMAND? W4200/2200,B

TRACK ZERO READ/WRITE UTILITY

COMMANDS:
Rnnnn - READ INTO LOCATION
     nnnn.
Wnnnn/gggg,p - WRITE FROM nnnn
     FOR p PAGES WITH gggg AS
     THE LOAD VECTOR
E - EXIT TO OS-65D
COMMAND? EXIT
A*
```

Jeff Easton
Brookfield, IL.

Jeff:

3 - 7 work with various Siemens drives, 8 with Shugart "screw steppers". The one which sounds quietest and produces no errors on a disk copy is best for you.

Al

* * * * *

ED:

This is in reference to a letter that was in the May, 1982 issue of PEEK(65). Mr. David L. Kuhn asked. How to get NULLS for printer "handshaking". The following method will work with all versions of OSI 6502 DISK-BASIC, as far as I know.

The number of NULLS to be used by Basic, Assembler/Editor, Extended Monitor and the Operating System Terminal/Printer Routines is stored in a Page Zero location. The NULL location is at (Decimal) 21 or (Hexadecimal) 15. For example, if you need 10 (Ten) NULLs, in BASIC you would type: POKE 21,10 or in the Extended Monitor type @0015 <CR> then type OA <CR>. This also works for cassette tapes too !!!!! You really get one extra NULL because zero is counted.

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_____	FLOPPY DISK VERSION	$499.00
_____	HARD DISK VERSION (Multi-User)	$499.00

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303—371-4300

You would also have to use this method when you have OSI's VERY FINE,NICE, FAST MACHINE "RSEQ" DISK RENUMBER COMMAND INSTALLED...ETC.

This is the very best machine language RENUMBER Program I have ever seen for OSI Computers. BOMB-PROOF, FAST, NO SCREEN NOISE, AND FOOL PROOF TOO....VERY FINE I MUST SAY!!!, OS65D V3.3 IS A VERY NICE PACKAGE but I still do use 3.2 quite a bit like with RSEQ command!!!

Al Adams
Midland, MI

* * * * *

ED:

In late May, I will be returning to Toyo Kogyo Co., Ltd., Head Office in Japan, after almost four and a half years of assignment to the Machine Tool Department of Mazda (North America), Inc., in Chicago.

I would like to take this opportunity to express to you my sincere thanks for the warm friendship and support you have so freely extended to me during my stay in this great country.

It has been a fruitful experience and a great pleasure meeting and working with you and I am hopeful that our good relationship will continue to flourish in the future.

Again, thank you very much and hope we will have an opportunity to meet again sometime in the future.

My family and I wish for you good health and success in the future.

Yasuo Morishita
Elk Grove Village, IL.

* * * * *

ED:

I have been subscribing to PEEK for the last 2 years and have found it both informative and educational. I started with a C4P cassette, had a whole 8K of memory! And was amazed by the lack of any support from the dealers (and OSI themselves). I was ashamed to run a comparison with my friend's computers, (Apple and Trash-80), but was very happy with the hardware in the machine. Of course I didn't know how to program, so I had to run canned software (if I could find any) which varied from poor to worse.

After about 8 months, I was depressed to no end! Then a new (small) dealer opened up only 60 miles away, and he seemed to know what he was doing!! He turned me on to PEEK and the Aardvark Journal, and OSI came out with the Series II; so being a glutton for punishment, I traded my old(?) C4P in on a C4P-MF. Lo and behold, it even worked and the documentation was almost right! The system is now 48K memory, with printer (M82) and modem (Lex-11); but guess what? After 11 months the modem program (OSI's) that came with it still does not work! So out of self defense I learned a little programming and my dealer sold me one that almost works. Your articles have been a tremendous help also.

I started using the 3.3 version of 65D in November of last year, and it looks like OSI has finally learned how to do something right! (Of course most of the software from 3.2 doesn't work, without a few changes.) The 3.3 system is a giant step forward, and well worth the $79.00 price!

Lars C. Pedersen
Chicago, IL 60618

* * * * *

ED:

If your technical writer doesn't recognize "Cegmon" maybe you need a new tech. writer. Cegmon is the vast improvement over Synmon (monitors) sold by Aardvark. I believe it is originally an English version. It has many of the keyboard and editing functions OSI should have included from the start.

Obviously, it vectors thru some of the previous unused space on page 1 and 2 in RAM. I just wondered if any PEEK readers had disassembled it.

I resent the implication that I tried to "cheat" and make a C2 into a serial "business" system. What would be the point? First, the C2 is adequate for its purpose as a hobby system and second, if I wanted a business system I would buy a 6809/SS50 as "Flex" is much superior to CP/M in both friendliness and ability.

Don't take this wrong, I like the OSI C2 for what it is, a versatile hobby system with both good graphics and an adequate operating system. With the aftermarket items now appearing, it will be plenty OK for the future too. I just don't think its presently available DOS systems are suitable for what I deem needed in the business world.

Neil Dennis
Bliss, NY

* * * * *

ED:

I have just subscribed to your magazine, posted the same day as this letter. "Ohio" recommended you.

I have a problem, so.....many problems. I have been interested and fiddling with electronics for ten plus years with the interest now changing to Micro's. I have a Superboard 4K.

Problem I. I have no knowledge of digital or digital to analog electronics. The only information I have on my micro is the users manual. Could you please advise any book(s) on this subject, preferably linked to our micro.

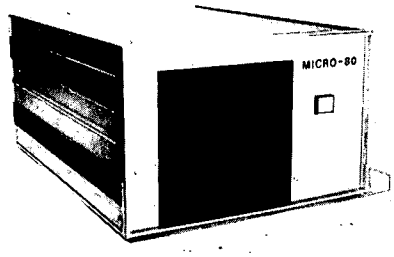
Problem II. Extra RAM "Static" verses "Dynamic". Dynamics appears to be easy to have battery back up. This could be important with large programs. Dynamic is also much cheaper, but what about hangups. Any advice?

Problem III. There are many levels of "Basic" and monitors. Where do you start? I would like full control over the display like editing, split screen. Also single key for those often used words, GOTO, GOSUB, etc.

Problem IV. Machine programming. How do I get into my micro? I have "De Jang's" 6502 book which just says "refer owners manual".

Problem V. Software. Education, this may be a problem as our standards and methods of education probably differ. Games, know no boundaries. Robotics, possibly my main interest, as where I work, I am on a fair amount of development work (electrical, electronics, pneumatics (air control) and mechanical, usually well mixed). If this could be micro controlled, so much the better and easier to alter. My superboard is a 600 new "D Basic" version 1.0 new 3.2, the basic will probably change; refer Problem III.

NEW FROM D & N MICRO PRODUCTS, INC.



MICRO-80 COMPUTER

Z80A CPU with 4MHz clock and CP/M 2.2 operating system. 64K of low power static RAM. Calendar real time clock. Centronics type parallel printer interface. Serial interface for terminal communications, dip switch baud rates of 150 to 9600. 4" cooling fan with air intake on back of computer and discharge through ventilation in the bottom. No holes on computer top or side for entry of foreign object. Two 8" single or double sided floppy disk drives. IBM single density 3740 format for 243K of storage on each drive. Using double density with 1K sectors 608K of storage is available on a single sided drive or 1.2 meg on a double sided drive. Satin finish extruded aluminum with vinyl woodgrain decorative finish. 8 slot backplane for expansion. 48 pin buss is compatible with most OSI boards. Uses all standard IBM format CP/M software.

Model 80-1200	$2995
2 8" single sided drives, 1.2 meg of storage	
Model 80-2400	$3495
2 8" double sided drives, 2.4 meg of storage	
Option 001	$ 95
Serial printer port, dip switch baud rate settings	

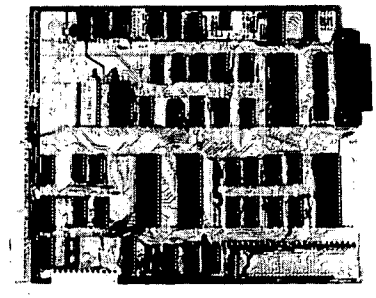
Software available in IBM single density 8" format.

Microsoft		Digital Research		Micropro	
Basic-80	$289	PL/1-80	$459	Wordstar	$299
Basic Compiler	$329	Mac	$ 85	Mail-Merge	$109
Fortran-80	$410	Sid	$ 78	Spellstar	$175
Cobol-80	$574	Z-Sid	$ 95	Super Sort I	$195
Macro-80	$175	C Basic-2	$110	**Pascal**	
Edit-80	$105	Tex	$ 90	Pascal/MT +	$429
Mu Simp/Mu Math	$224	DeSpool	$ 50	Pascal Z	$349
Mu Lisp-80	$174	**Ashton-Tate**		Pascal M	$355
		dBase II	$595		

Convert almost any static memory OSI machine to CP/M® with the D & N-80 CPU Board.

Z80A CPU with 4MHz clock. 2716 EPROM with monitor and bootstrap loader. RS-232 serial interface for terminal communications or use as a serial printer interface in a VIDEO system. Disk controller is an Intel 8272 chip to provide single or double density disk format. 243K single density or 608K double density of disk storage on a single sided 8" drive. A double sided drive provides 1.2 meg of storage. DMA used with disk controller to unload CPU during block transfers from the disk drives. Optional Centronics type parallel printer port complete with 10 ft. cable. Optional Real Time Calendar Clock may be set or read using 'CALL' function in high level languages. Power requirements are only 5 volts at 1.4 amps. Available with WORDSTAR for serial terminal systems.

D & N-80	serial	$695
D & N-80	serial w/Wordstar	$795
D & N-80	video	$695
Option 001		$ 80
	parallel printer and real time calendar clock	



D & N-80 CPU BOARD

OTHER OSI COMPATIBLE HARDWARE

IO-CA10X Serial Printer Port **$125**
Compatible with OS-65U and OS-65D software

IO-CA9 Parallel Printer Port **$175**
Centronics standard parallel printer interface with 10 ft. flat cable

BP-580 8 Slot Backplane **$ 47**
Assembled 8 slot backplane for OSI 48 pin buss

24MEM-CM9	**$380**	**24MEM-CM9F**	**$530**
16MEM-CM9	**$300**	**16MEM-CM9F**	**$450**
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24K memory/floppy controller card supports up to 24K of 2114 memory chips and an OSI type floppy disk controller. Available fully assembled and tested with 8, 16, or 24K of memory, with floppy controller (F). Controller supports 2 drives. Needs separated clock and data inputs. Available Bare (BMEM-CM9F) or controller only (FL-470). Ideal way to upgrade cassette based system

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Expansion for C1P 600 or 610 board to the OSI 48 pin buss. Requires one slot in backplane. Use with BP-580 backplane

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Supports 8K of memory, 2 16 bit parallel ports may be used as printer interfaces. 5 RS-232 serial ports, with manual and Molex connectors

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Extends life of drive and media. Shuts off minifloppy spindle motor when system is not accessing the drive. Complete KIT and manual

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VISA MasterCard

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Disk Drives and Cables

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8" Shugart SA851 double sided **$585**

FLC-6 6ft. cable from D & N or OSI controller to 8" disk drive **$ 69**

5 1/4" MPI B51 with cable, power supply and cabinet **$450**

FLC-5 1/4 8 ft. cable for connection to 5 1/4 drive and D & N or OSI controller, with data separator and disk switch **$ 75**

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ML 82A Dot Matrix Printer **$534**
120 CPS, 80/120 columns, 9.5" paper width, friction or pin feed

ML 83A Same as 82A except **$895**
16" paper width, 132/232 columns with tractor feed

ML 84 Same as 82A except 200 CPS, **$1152**
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56K 2-MHz Ultra Low Power CMOS Static Memory Board **MEM-56K $850**

Partially Populated Boards (Specify address locations required) ... **MEM-48K $750**
MEM Board uses the new 2K-Byte Wide Static RAM chips which are 2716 EPROM compatible. Any 2K byte memory segment can be populated with RAM or EPROM (or left empty for use of Address Space by another board). Fully expandable to any memory size you will ever need. No special addressing requirements, just solder in extra sockets
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MEM-24K $450
MEM-16K $350
MEM- 8K $250
MEM- 4K $200
Extra 2K RAM Memory Chip **$24**
Optional Parallel Printer Port **-P $120**
Optional Calendar/Clock Software available in EPROM) **-T $ 25**
Both options (Disk software mods provided for use of 6522 VIA on printer). **-PT $125**

EXAMPLE USES:

C4P & C8P: Expansion to **4K RAM** of Basic workspace.
Parallel Printer Port — Reserve Serial Port for MODEM
Calendar/Clock Displaying on unused portion of screen.
Space for 5.75K of **Enhanced System Monitor EPROMS.**

All of this on 1 Board, using only one of your precious slots. Software for Enhanced System Monitor capabilities is continuously being developed and improved. As new EPROM Monitors are available, you may upgrade to them for any price differential plus a nominal $10 exchange fee. Another possibility is to fill any portion of the memory with Basic Programs in EPROM for **Power-on Instant Action.** This custom EPROM programming service is available at $25 per 2716 (Includes EPROM). Extra copies at $15 for each EPROM.

C4P-MF & C8P-DF:

Memory expansion to **48K.**
Add 6K **Memory** above BASIC for special software requirements.
Parallel Printer Interface and/or **Displaying Calendar/Clock.**
Add 1.75 K **Enhanced System Monitor ROM.**

C3: Up to **56K of Memory** Expansion — can be addressed for **Multiuser.**
(Optionally, each user can have his own **Dedicated Printer Port).**

C1P,C4P & C8P FLOPPY DISC CONVERSIONS:
Memory/Floppy Board (Includes MI48P1 ROM) ..... **MEM F-16K $450**
C1P-600 Board Adapter & Cable ..... **A600/48 $ 50**
Additional Memory/Printer/Times ..... **(See MEM Board Prices)**
5¼" Drive/Case/Power Supply & Cable to MEMF Board **FD5 $399**

IEE-488 INTERFACES AND SOFTWARE:

The General Purpose Instrumentation Bus (GPIB Controller interface is available for all OSI Computers. Machine code GPIB Drivers are linked to Basic to provide easy control of IEEE-488 instruments which is equal to the best of Hewlett-Packard Controllers and far superior to most others. Basic Commands for Serial Poll, Parallel Poll, IFC Clear, full Local/Remote Control, Respond to SRQ Interrupts, Send Trigger, do Formatted Input/Output, Direct Memory Input/Output and MORE. Interface includes IEEE-488 Ribbon Cable/Connector.

GPIB Controller Interface for C2, C3, C4 and C8 Systems ..... **GPIB 4-488 $395**
GPIB Software for **OS-65D** (Add -8 for 8" or -5 for 5") ..... **GPIB 488-D $ 70**
GPIB Software for **OS-65U** ..... **GPIB 488-U $100**
GPIB Software on two 2716 EPROMS for **ROM** based systems ... **GPIB 488-R $100**
Add Optional **Parallel Printer Interface** to GPIB 4-488 ..... **-P $120**
Add Optional **Calendar/Clock** to GPIB 4-488 ..... **-T $ 25**
Add **2K RAM** to GPIB 4-488 (Specify location, $4000-$BFFF & $DOOO-$SEFFF available) **-M $25**
GPIB Controller for C1P, Includes Software, Clock, All Features of ROMTERMS, & space for 6K EPROM ..... **GPIB 6-488R $395**
Add Optional Parallel Printer Interface to GPIB 6-488R ..... **-P $120**

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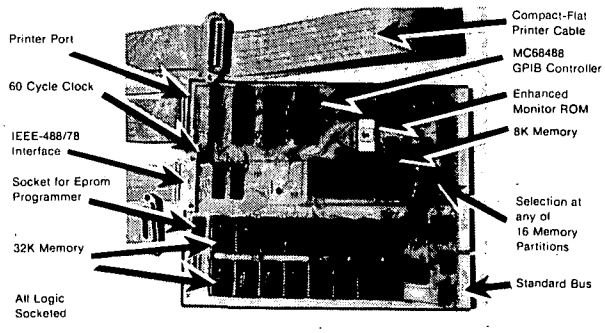
C1P ROM with 24/48 Col Display for Series II, Smart Terminal, Line Editing, Corrected Keyboard Screen Clear and More ..... **ROM-TERM II $59.95**
C1P ROM with 24 Col Display. Other ROM-TERM II Features, Disk Boot, and ROM/Disc Basic Interchange ..... **ROM-TERM $59.95**
C4P-MF/C8P-DF Disk warm start, changed IRQ Vector and just flip switch for Serial or Video System with Corrected Keyboard ..... **SYNKEY $39.95**

ENHANCED MONITOR ROMS FOR USE ON GPIB 4-488 & MEM BOARDS:
Expanded Support for **C4P & C8P** Featuring Calendar/Clock, Line Edit, Smart Terminal, Memory Files, Parallel Printer Control, Corrected Keyboard, All Features of ROMTERMS, **Disk Support** with Warm Start and More **MI48P1 $59.95**
Expanded C2 Monitor with Calendar/Clock Software, Hard Disk Boot, Warm Start and Multi-User Control for C2 Systems **MIC2-1 $59.95**

IEEE-488 CONTROLLER INTERFACE



THE GPIB 4-448 INTERFACE BOARD CONVERTS ANY OSI COMPUTER INTO AN IEEE-488 INSTRUMENT BUS CONTROLLER!

BENEFITS — Provides a Sophisticated Instrumentation Controller at very low cost (often saving thousands of Dollars). The combination of IEEE-488 Instrumentation Controller and High Capacity Hard Disk file storage available on OSI Computer systems is available at a fraction of the cost required by the nearest competitor. The IEEE-488 Bus, also known as the GPIB,HP-IB or IEC-625 is the most popular International Standard for connecting instrumentation systems. This 16-line bus is designed to interconnect and control up to 15 instruments at a time. Currently, over 2000 different instruments are available to work on this bus. They include: Plotters, Digitizers, Printers, Graphic Displays, Recorders and a multitude of specialized Test/MeasurementControl Equipment.

EPROM-ABLE — Can be used with a C4-P to create a dedicated IEEE-488 controller.

C2-D MULTIPLE USER SYSTEMS

SAVE — 2 and 3 user Time Sharing Systems are available on the C2-D Winchester Disk Computer at a considerable cost savings from C3 Multiple User Systems. The 3 user C2-D System can be expanded to include a word processing printer, 4 other parallel printers and 3 serial printer interfaces.

COMPATABLE — The special C2-D Multi-User Executive Program is 100% compatable with OS-65U V1.4. The Multi-User Real Time Clock, Memory Partition Control and IRQ Interrupt Management are done on the Micro Interface Memory Board. Thus, the CPU board is not modified and remains in factory condition.

CONVERSIONS — The Up-Grade of your existing C2-D Computer to Multiple User Configuration is also available. Call for details.

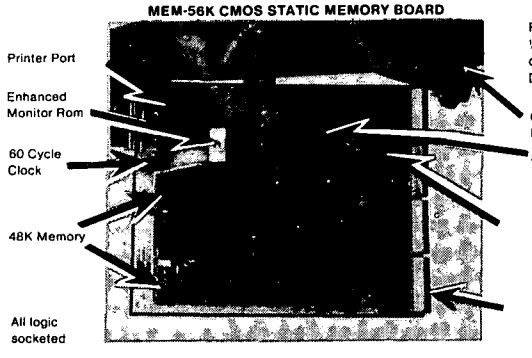
FLOPPY DISK UPGRADES FOR C1P, C4P & C8P

Our Memory/Floppy Board provides easy conversion of 502 and 600 CPU Computers to Floppy Disk Operation. The **MEMF** Board has a floppy disk interface which includes a data separator and the ability to automatically lift the disk drive heads — your floppy disk lifetime will be extended many times. You will retain the cassette interface for your existing software; which can easily be converted to Disk.

This **MEMF-16K** Board is populated with **16K RAM** (50K possible) and has features of the MEM CMOS Static Memory Board with an added floppy interface. The low power memory means extra power supply not required. **ROM Basic** is retained even when Board is populated for 48K Disc Basic. An optional Parallel Printer Port and Real Time Calendar/Clock is on board.

Complete Ready to Run conversion kits with 5¼" or 8" Disk Drives are available.

MEM-56K CMOS STATIC MEMORY BOARD



ULTRA-LOW POWER — By using CMOS Static RAM Memory, the total power consumption is about ½ Amp at 5 Volts when populated for 48K. In fact, most of power is used by the Address Line Buffers and the Data Transceivers.

MULTI-USER — Can be addressed for any of the 16 multi-user memory partitions. The low power and single memory board/partition simplify installation and provide a typical $1400 saving for a 3-user system.

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LAS VEGAS, NEVADA 89102
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Any advice? Even if it is creep back in your hole.

I have been in South Africa where personal micros are few and far between and I don't have to chase a lion or an elephant every time I wish to leave my house. (The only wild ones left are in game reserves). The point I am trying to make is please remember, for the questions above, that I live far from any good source of equipment and software. Also, with a hobbyist budget I have to be extra careful because of the extra cost of long distance mailing. I do not have much problem with loose components but with special PCBs or special built equipment it is another story.

THE END? Maybe to this letter, but not the questions. I feel as though I have been thrown into a dark hole with no way out. Sounds grim? Well, you are not in my shoes. Waiting for your magazine.

R. A. McClean
King Williams Town,
South Africa

Mr. McClean:

Yours is a typical letter from a beginning computer hobbyist. You need general, theoretical information on the operation of computers, plus specific information on M/A-COM OSI machines. Your education will be a long process, but very rewarding. Try these sources:
Back issues of PEEK(65)
OSI Basic in ROM, by Ed Carlson
First Book of OSI, Aardvark
SAMS hardware manuals
OSIO Newsletters
And our readers. Readers with answers and hints, please write to PEEK(65).

To answer some of your questions: Static vs Dynamic RAM is more a question of making sure that your power supply will be sufficient. We don't know of any "hang-up" problems. Check the ads in PEEK(65) for some of the ROMs that are available - or see articles like this month's by S. Hendrix for ideas about single key GOTOs.

AL

* * * * *

ED:

(from CBBS)

After subscribing to PEEK (65) for some time, and reading the Letters to the Editor, I suspect this letter will have a small audience. However, I thought you would be interested in one of the more unusual uses of OSI equipment, so here goes.

We own a C3-C 2-user system (for small business purposes), but do NOT use OS-65U or any other OSI developed operating system!!

With the machine, we bought the UCSD p-System (version II.s1) from OSI upon the recommendation of a young man who promised to be our programmer. He assured me that a higher level language like Pascal would make both the development and maintenance of any size system easier and many times more efficient. Since he makes his living on mainframes using PL/I, I relied upon his knowledge and judgement. To say the least, the merits of the p-System could be the subject of an entire letter, but I will leave that for some other time.

Only AFTER purchasing the machine did we learn II.s1 is a special version compact enough to fit in the 48K limit of the user partition found on the OSI machine. This limit is only slightly eased by 4K at D000 (for the BIOS), but at least it is usable except for really large compiles -- which we obviously cannot do. Even

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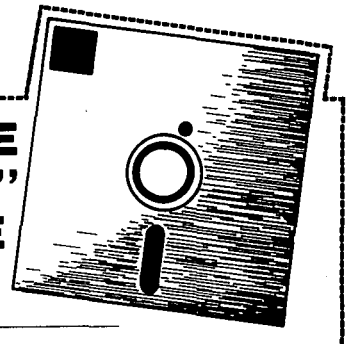

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this small version of the p-System would really like to have all 64K available. (oh well).

In addition, the p-System did not know about our beautiful CD-36 hard disk and the second partition sat idle. Our programmer (a very capable young man) decided that he could do something about these last two situations, and he did!!

We are now running a multi-user version of the p-System which accesses the hard disk via two logical (16Mb) p-System disks!!

It just so happened version IV.0 of the p-System was released soon after we took delivery on the C3. We wanted the newer version with all of its modifications but OSI evidently decided not to try supporting it in 48K. The documentation on it suggests it now NEEDS all 64K for a development system (it also says 48K would be enough for an execution-only environment but alas, ours is both). We bought version IV.0 from Softech Microsystems, but ran into problems with the hardware! It is the old "OSI vs The World" disk format problem! Our new version of the p-System is written in the "Industry Standard" IBM 3740 single sided, single density format -- which we cannot read with either the floppy drivers in the OSI supplied p-System BIOS, or with any of the OSI systems. So we HAVE the slick new p-System version, but cannot READ it off the disks!!

We caught a glimmer of hope (having abandoned a software driver solution after exhaustive testing) in reading Column One of the May '82 issue of PEEK (65)!

You mention a "proxy-80" board from The Software Federation, but offer no clue as to their address. Is this the solution we seek? All we want is to read the disks, but perhaps there is some merit to switching over to a more standard format permanently. You also mention "D&N", but I don't know what/who they are, or if they might be of help.

Finally, there is M/A-COM OSI itself. What do you know about the rumors they are working on an IBM compatible board themselves? Will it support BOTH formats simultaneously? (After all we have two drives, right?) Also you once mentioned something about 64K user partitions? Could that be retro-fitted to a late 1979 C3? In response to your request in the June '82 issue of PEEK (65) on the various applications of OSI equipment, I will briefly explain some of the programs we have developed using the p-System.

In the p-System itself, we use the Editor as a word processor to compose letters such as this one and develop various forms which are then taken to a printer for duplication. Descriptions of our various products are kept on file and updated when a new technical release comes along. Installation bulletins for those products are updated in the same manner. All such correspondence is stored in Text files. For us, this has reduced our paper work significantly while increasing its accuracy and accessibility.

Programs written in Pascal include:

a) Complete editing of all fields.

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3) We generate any combination of price lists we choose.

4) It allows an "unlimited" number of items.

5) It allows an "unlimited" number of subfiles to store those items.

I hope this letter is of some interest to you or your readers and I hope you can answer some of my questions! We patiently await any input regarding this matter.

Thank you very much for your time.

Jay Mihalak
Vice-President
Tile 'N' Tile Distribution Centers
(Formerly The Floor Shop, Inc.)
55 Elizabeth Lk. Rd. Pontiac, MI 48053

Jay

Let's here more about p-System on the CD-36 and multi-user. It sounds like that could be an article in itself.

D & N makes a Z80 CPU board for C/PM only, called the Proxy-80, see their ad on page 23.

IBM compatable floppies MAY be possible later on. If they are, there will probably be software to convert between OSI and IBM.

We haven't seen a 64K board yet, but doubt it will fit your '79 C3.

Brian Hartson
Asst. Tech. Editor

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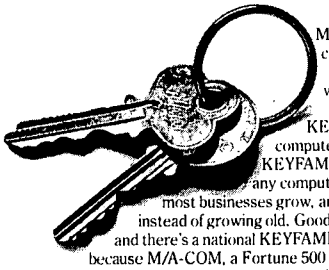

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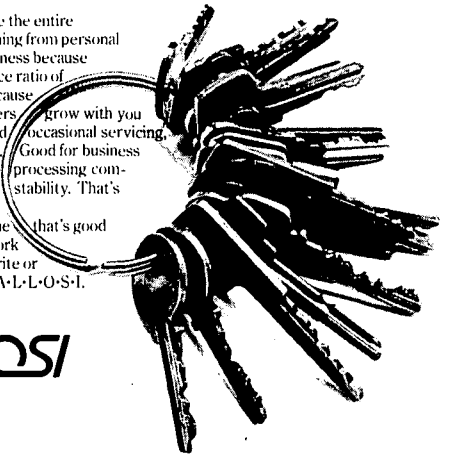

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