NIBBLES & BITS

The Comprehensive Monthly Newsletter for ADAM Users

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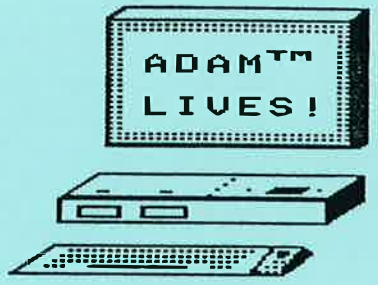
Oak Hill, WV 25901



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This issue includes 10 SmartBASIC program LISTs and 6 assembly language programs.

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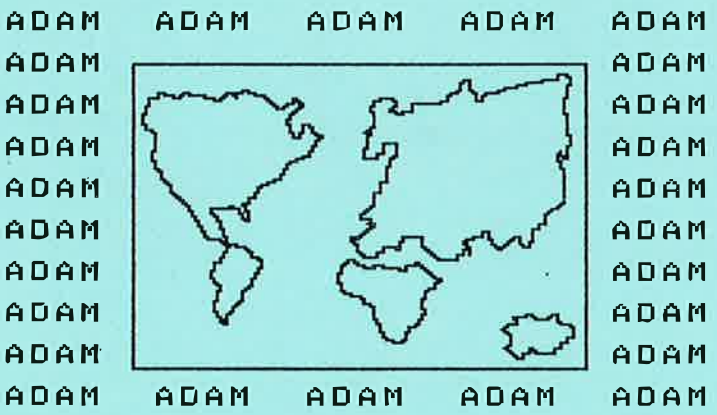

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EDITOR'S NOTE

Yes ... we're late again. I am sorry. I am strongly committed to start moving back toward the scheduled newsletter deadline with the March issue. In fact, we've already got a large portion of the programs done for the March issue. It should be out in about two weeks.

We are generally very fast on processing orders, and I answer most mail within a few days. Thank you for your patience on these last few belated newsletters.

You know ... two years ago, I didn't even know what RUN meant in BASIC. And, I certainly knew absolutely nothing of machine or assembly language. For years though, I was a software user; the mere notion of programming was at best a ponderous consideration. Then, with ADAM it finally became an intriguing temptation.

After several months of BASIC programming, it was time to move on to machine code. I disassembled and *tried to* study most of Coleco's software. I read every book I could get my hands on (most of them had to be ordered). It wasn't long till I was almost as profecient in Z80 as BASIC.

Today stringing together Z80/EOS routines is second nature. Logical gates, masking, bank switching, etc. now seem patently simplistic. This electronic marvel, the Coleco ADAM, is no longer a complete mystery to me.

What does all this mean to you? Well ... to me, one of the greatest joys of acquiring knowledge is passing it on to others with similar interests. Every month we work diligently (sometimes frantically) to pack as much **useful information** into 31 pages as we possibly can. Usually, the programs and tips that you read in an issue were just written or discovered within the past two or three weeks.

As editor, my primary aim is to rekindle some of that initial excitement you had when you first took ADAM out of the box. As a group, our goal is that after you finish reading each month's newsletter, you feel like saying "WOW!!! That issue was really worth the money."

EDITOR-IN-CHIEF
SOLOMON SWIFT

N&B NEWS

☐ We have added REEDY SOFTWARE's popular graphic adventure **MageQuest** to our PRODUCT LIST. This package is highly recommended. Once you get started, it's very hard to put down.

☐ Several dozen of our subscribers have already renewed for two or three years. But the bulk of you will have your renewals due in June or July. If everyone renewed at the same time, things could get hectic around here. In an effort to stagger all these renewals, we'd like to offer a special discount. If you renew for 12 months before April 15, 1987, you'll get a coupon for a **free** Public Domain volume (DDP or disk) of your choice with any product order.

☐ We now have the latest version of the Pinball Construction program. This version has much fewer bugs. It includes two demo games and the Insert Logic function works correctly. With this feature you can make your pinball games self loading. If you got the older version from us, just return it (with an order -- no time limit) and we'll transfer the newer program over for you.

☐ Using this newer version of Pinball, we have now converted all of our PD pinball game sets to self booting packages. However, this reduces the number of games per medium to ten (to make room for the program logic). Now you don't even have to have Pinball Construction in order to play the pinball games.

☐ We also stock the Pinball Construction - Hardhat Mac instructions. They're only $1.95 each.

☐ ShowOFF II: Word Processing Enhancements is finished. It is the *first* program to ever actually modify SmartWriter. For more details on this exciting software, see the ADAM ACCESS department.

☐ One of our subscribers has reported that the printer ribbons she got from us were spindled in the wrong direction. If you purchased ribbons in the last month or so, please check yours. Let us know if they won't print.

☐ We have a winner our fifth HACKER'S CONTEST. This hacker received a $10.00 cash prize and a three month extension to his N&B subscription. He is:

Jim Guenzel
Maryland Heights, MO

☐ We have **just finished** ShowOFF II: Word Processing Enhancements. Most of this issue was printed with WriterMate (from ShowOFF II) directly from SmartWriter using a Panasonic KX series dot matrix printer. This software is packed with power. See the ADAM ACCESS department for more details.

☐ We have four other software projects underway (they are in various stages of completion). ShowOFF III, which will be our next release, features graphics utilities that make it a snap for you to design your own fonts, sprites, and clip art. ShowOFF IV is an independent 60 column word processor -- we are working now to make this an entire machine code program. PowerDISK will let you convert your BASIC 1.0 backups to allow for a ramdisk (with the 64K expander). It also has functions to let you customize that BASIC backup including a new bootstrap routine to permit the HELLO turnkey from the boot drive. PowerPAINT is a super advanced version of SmartPAINT from ShowOFF I. This program requires the 64K expander and includes even more print options (inverse, variable length, sectional hardcopy, etc.). It also makes use of multiple font sets and character sizes. It permits screen buffers for multiple pictures in RAM and will even have a picture magnification feature. It even has a clip art function and MUCH more. On this program we'll offer a trade-in type of discount for ShowOFF I owners (regardless of which authorized distributor you got ShowOFF I from). All of these packages WILL be released by DIGITAL EXPRESS during 1987. Then, toward the end of the year (or the first part of 1988) Dr. Swift's PowerBASIC will be released.

☐ Don't forget about our ShowOFF I picture file contest. We have only received a handful of entries thus far. Remember, even if you don't win, you get a free volume of N&Bpix in return.

☐ Below is a list of the winners in our Jeopardy software promotion. One of our original winners honestly disqualified himself. In the light of this, we declared the next two high scorers as winners too. Two of these six winners also had scores above one million, but the certificate routine will not print that many digits.

score: 640095
James Schwartz
Rochester, NY

score: 653455
Scott Watson
Indianapolis, IN

score: 697700
R. Coutts

score: 788025
Raymond Tremor
Honolulu, HI

score: 819000
James N. Siler
Hixson, TN

score: 961300
Bob Langston
Ft. Devens, MA

☐ One of our subscribers, Jim Guenzel, has developed several powerful enhancements to Strategic Software's MultiWrite program. Among the improvements to **multiwrite** are: the ability to merge (short) files and new screen color selections. He has written a new **printfile** program which includes these features: a routine to do multiple copies, the ability to chain two or more files, a routine to do 'headers' and 'footers', and improved error handling. We have added his collection of enhancements and documentation files to our PD libraries. On the medium we've also included two of our own programs. EZkeys will permit keyclick just like SmartWriter does. And, we included a patch that will allow you to use a dot matrix printer (through port 64). Please note that you **must** have MultiWrite by Strategic Software in order to take advantage of this package. It is available now by our standard Public Domain Software rules. The package title is "MWplus01".

☐ The **SmartPAINT** (from our ShowOFF I package) picture contest is for the best judged picture file created with SmartPAINT. There is no limit to the number of entries that you can enter. All entries must be on a data pack or disk. If you include a return mailer with sufficient postage, we'll send you a SmartPAINT PD **pix** volume in exchange. Entries will be judged on creativity and attention to detail; decisions of the judges are final.

All entries MUST be postmarked prior to 4/1/87. The three winners shall be notified no later than 4/15/87. The first place prize is $100.00 plus a one year subscription extension. The second place prize is $25.00 plus a one year extension. And, third place gets a free one year extension.

All entries shall be considered as public domain. So ... you'll not only have a chance at the prizes; but, you'll also increase the number of available pictures for all ADAMites who use ShowOFF I.

☐ Dr. Swift is still setting up many customized print routines for SmartPAINT. There is a short waiting list, so it may take a few weeks. But he'll be happy to set one up for you (if at all possible with your printer).

ADAM™ NEWS

☐ REEDY SOFTWARE has just released two new packages. **Lab Mouse** puts you in a maze to find the cheese -- great graphics. See our review in this issue. They have also completed **SOLO Adventures 3** for you MageQuest users. REEDY is certainly taking the dominant role in the development of fun-to-play third party graphic games for ADAM users.

☐ **MMSG** has just released **EASY COME -- EASY GO.** This package will help you answer a variety of financial questions. See our review in this issue.

☐ Many ADAM software and hardware developers have just released their Winter - Spring catalogs. This is an excellent time of year to send for these ADAM product catalogs. Many of them feature very impressive graphics and detailed information on new products.

EXPANDING YOUR SYSTEM

PRINTER ALTERNATIVES

(part 4)

Last month, in this column, we mentioned that we'd have an RLE conversion program in the February issue. See the HACKER'S DELIGHT department for this powerful 6K program.

Here are a couple of more questions that our readers frequently ask us. Do we recommend a particular second printer? What should you look for in features with another printer?

We use Panasonic KX series printers on all our systems. We consider these to be the best for the money on the market. Panasonic has recently replaced their early models with the 1080i and the 1091i. None of us has had a chance to evaluate one of the newer models yet. The good news is that you can get 1080's, 1090's, and 1091's at closeout prices (no 'i' suffix). One of the nicest features of the KX series is the FOUR built-in word processing functions (left, right, center, and auto line justification). If you use ADAM for serious word processing, it's hard to get by without these powerful features.

What should you look for? There are several considerations. First, let's discuss [ESCAPE] codes. Nearly all impact dot matrix printers developed in the last few years include several 'K' of built-in software. This software allows you to access different sized characters, create your own characters, use boldface, print bit image graphics, etc. All these built-in functions are implemented by dint of special codes sent to the printer.

These codes generally consist of two or three bytes sent to the printer. The first byte is always an ASCII 27, or ESCAPE. When the printer software gets the 27 from your computer software it stops printing (for a few microseconds) and processes the next one or two codes in the particular sequence. Text printed after that sequence will take on the new, user specified features.

More on printers next month. Take a look at the RLE file at the bottom of the next page printed with SmartPAINT from ShowOFF I using a Panasonic KX-1091.

ADAM™ USERS FORUM

The following questions and comments have been culled from recently received mail. The reader's input is a reasonable facsimile of the actual correspondence. My response, where applicable, is generally more detailed than my written response (if any) for the benefit of all readers. Please let us know if you want your street address listed when you send FORUM questions and comments.

MEMORY EXPANDER NEWS

I have recently been sent a video tape showing Big John's (Orphanware) 256K expander. The video ran for two hours and the programmer that did QuickCopy demonstrated the unit. This gentleman was setting up the software for the expander. It worked fine on the screen and showed how easy it was to assemble and disassemble a program. You could switch from one program and back returning at the same location when you had accomplished the switch. The expander itself was very nicely made, but in order to increase it to 512K you would have to have more room inside of the memory console. The way the expander was put together was to put two boards together back to back and solder thru the units. It would be nice if some plastic case manufacturer were to look at this problem and redesign a new case whereby the ports could be put on the back and your disk drives could be installed in the case also.

Walter Wright
490 - 17th Street
West Babylon, NY 11704

MultiWrite WITH A SECOND PRINTER

I'm interested to know if anyone knows how to use MultiWrite (from Strategic Software) with Orphanware's Centronics Interface. I am using a Panasonic KX-1091 and can't use my MultiWrite with it.

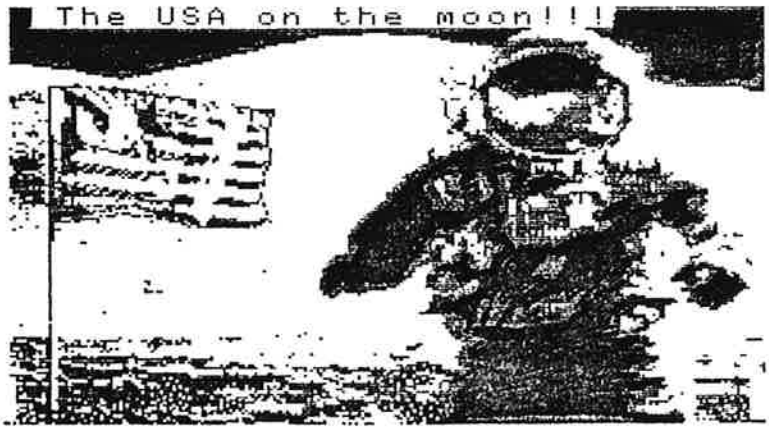
Wayne Roe
Barksdale AFB, LA

EDITOR'S NOTE: MultiWrite's print algorithm CALLs a print routine in the EOS (ADAM's Operating System) that both the Orphanware and Eve Electronics software overwrites. Thus, there is a difficulty in using a second printer with this BASIC word processor. We have a short program in the HACKER'S DELIGHT department this month that will overcome this limitation for you.

PRINTER PROBLEM

I am interested in hearing from anyone who has tips on what to do when the ADAM printer "hangs up" or forgets where the right and left margins are. My only solution seems to be to turn ADAM off for a while or fiddle with the lever switch on the leftside that the ribbon cartridge holder contacts as it returns along the chrome rails to the left side.

William N. Stewart
78 Foxbar Road
Burlington, Ontario
Canada L7L 2Z6



USING A COLOR MONITOR

One of the major drawbacks of the ADAM is the lack of 80 column word processing in color. The **Apple Color Monitor II**, a standard composite monitor, is an excellent upgrade from a TV. There is one small problem; it doesn't come with a speaker. It retails for $380. However, PC Network, a mail order firm, offers it for $255 (plus 8%). Their address is: **PC Network, 320 West Ohio Street, Chicago IL 60610.**

John Wojakowski
Topeka, KS

CHANGING BASIC'S REVISION NUMBER

You could encounter a problem is you try to change SmartBASIC's revision number -- PEEK (260). Some programs check for the revision number. I found this out by trying to RUN "In Search Of The Ruby Chalice".

John F. Busby, II
6634 SW 41st Street
Davie, FL 33314

BE CAREFUL MODIFYING SmartBASIC

The recent barrage of BASIC changes published in both the "NIAD NEWSLETTER" and "NIBBLES & BITS" has kept me busy changing my actual SmartBASIC tape with a program called basicmod (note: this program physically changes your SmartBASIC tape). Over the course of months I began noticing peculiar things with BASIC. Finally, I realized an error in the BASIC modifier program. If you are using or have used this public domain program, please check to see that you are using the corrected version. The problem is with line number 320. Make certain your version reads like this:

```
320 b = INT((2048 + a - 256)/1024)
```

Michael Bogrees
Englewood, OH

BIT BY BIT

LOW RESOLUTION GRAPHICS

SmartBASIC is equipped with two graphics modes: low and high resolution. There are two fundamental differences between these two modes. Each mode has its own graphics control commands and the modes use different sized blocks for drawing.

In the high-res mode ADAM uses 256 blocks across by either 160 (HGR) or 192 (HGR2) blocks down. Each block in HGR mode is one screen dot -- the smallest element that ADAM can draw.

In GR or low-res mode ADAM uses 40 blocks across by 40 blocks down. Each of these blocks appears as a rectangle. Each rectangle is 6 screen dots across by 4 screen dots down. In GR mode you have 1600 of these blocks that you can work with.

For some very peculiar reason, SmartBASIC uses different color tables for the GR and the HGR modes. Internally, ADAM recognizes still a third color table. In our July issue (page 12) we listed a simple program that you can type in that will correct this confusing situation -- with it you only have to learn one color table.

When you enter the low-res mode, the screen will clear. At the bottom, you have four lines for TEXT (in the TEXT mode you have 24 such lines). Above these four TEXT lines is where you can draw your block graphics.

SmartBASIC gives you five commands specifically for the GR mode. These are: COLOR, PLOT, SCRN, HLIN, and VLIN. As in the TEXT mode, each command performs a specific function.

As you might expect, the COLOR command determines the color of the next block drawn. The format for using the command is:

COLOR = x

You can replace the 'x' with a number in the range of '0' thru '15'. Or, you can put any variable in the command equation.

We'll have more on ADAM's low resolution graphics mode next month.

BYTE-SIZED BASIC

POKES TO PLAY WITH

(part 8)

CHANGING THE INIT FUNCTION:

In our August issue we explained how the BASIC command **INIT** works. Apparently since this was in the HACKER'S DELIGHT department, many of our subscribers overlooked it.

There are a lot of different ways to change to directory size of a standard ADAM tape or disk. Some of these are very complex and involve block editing. The easiest way is to just change the INIT command with a simple POKE.

Without any changes, SmartBASIC INITializes a medium for one block or 35 user files (plus four system files). A two block directory permits 74 users files. This way you won't get a NO MORE ROOM message even though you have plenty of space left on your DDP or disk.

To make the change to INIT, here's all you have to do.

```
POKE 25308, 2
```

Now when you use the INIT command, it will automatically make a two block (74 potential user files) directory. The default value of address 25308 is a one.

WIND CHILL CALCULATOR

If you've lived in the south all your life, you may have not even heard of **wind chill factor**. To those of us in northern areas, it is all too common a consideration.

The wind chill factor is simply how cold the air feels to human skin. It is scientifically calculated using the absolute temperature in conjunction with the wind speed.

The program on page 10 will let ADAM calculate wind chill factors for you. And, it will even print a nicely formatted wind chill chart.

The wind chill is calculated in the subroutine that starts at line 3000. You enter the routine with the wind velocity stored in the **mph** variable and the absolute temperature stored in the **temp** variable. The the routine returns the answer (ADAM's calculation) in the **chill** variable.

Notice the trick on line number 3030 that rounds off the result to the nearest integer. The chart on the top of page 11 was created with this program.

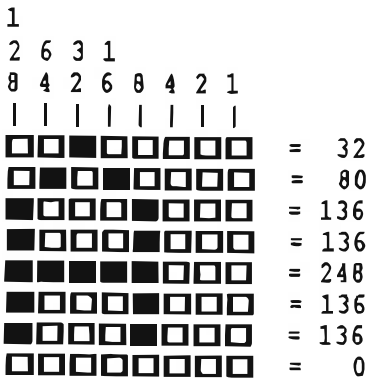
CREATING SPRITES

Sprites require two coordinated tables -- one for the current screen parameters and one for the sprite design. Since we are currently using SmartBASIC 2.0 to control our sprites, we don't need to be concerned with the parameter (or attribute) table. Right now the only point worth mentioning about this table is that four parameters are used for each sprite: the vertical screen position, the horizontal screen position, the displacement in the pattern design table, and the color.

The patterns are created by using a technique known as **bit mapping**. With bit mapping, each screen dot is represented by a single bit -- this is the same way the HGR mode draws graphics. Each byte in a bit mapped graphics design represents eight screen dots. When a dot is on, that bit has a value of one. When a dot is off, that bit has a value of zero. It is convenient for us humans to translate this information into to decimal values.

To do so, just add up the powers of two. The leftmost bit (the seventh) of a byte has a set value of 128 (2 to the seventh power). Going to the right, the next bit (the sixth) has a set value of 64 (2 to the sixth power). Then, continuing the logic, the rightmost bit (the zeroth ??) has a set value of one (2 to the zero power).

Let's take a look at a bit mapped shape to see how to translate each byte's bit configuration into a decimal number. See the example at the top of the next page. The shaded blocks represent set (or turned on) bits. The hollow blocks represent reset (or not turned off) bits.



As you can see, this bit map forms the letter 'A'. In fact, this is exactly the same bit map as ADAM's own CHR$(65).

To get the decimal value for a row (or byte), all you do (as mentioned on the other page) is total up the powers of two. In the second row from the top, you simply add 64 to 16 for a total of 80. In the next row down (the third byte of the bit map), you just add 128 and 8 to get a total of 136. See how simple it is. Next month, we'll include a full page of (blank) sprite grids for you to create (shade in and calculate) your own sprite designs. Be sure to note that in the row with no bits set, the byte value is zero.

SmartBASIC 2.0 FEATURES

The program to the right demonstrates sprite usage in SmartBASIC 2.0. It prints the word "ADAM" with sprites. Then it pulses between double and standard magnification for an interesting display.

The program also reveals several tricks. Line number five verifies that SmartBASIC 2.0 is in memory. In BASIC 1.0, address 259 has a value of 195. In BASIC 2.0, its value is 210. There are several other similar POKE checks, but this one is easy and common.

Line numbers 20 through 50 contain the DATA for the four letters (A, D, A, M). Line numbers 70 and 80 clear our designated sprite pattern design area. Then line numbers 100 through 170 read the DATA values into the RAM pattern table.

Line number 200 sets up the pointers to the pattern table. We started the table at address 26960 (105 * 256 + 80 = 26960).

We'll have more on this simple program, BASIC 2.0, and sprites next month.

```
  1 REM simple sprite demo
  3 REM FOR BASIC 2.Ø ONLY!!!
  5 IF PEEK(259) <> 210 GOTO 500
 10 LOMEM :28000
 20 DATA 32,80,136,136,248,136,136,0
 30 DATA 240,136,136,136,136,136,240,0
 40 DATA 32,80,136,136,248,136,136,0
 50 DATA 136,216,168,168,136,136,136,0
 60 PRINT " one moment please ..."
 70 FOR x = 0 TO 1023
 80 POKE x+26960,0: NEXT
100 FOR x = 0 TO 7: READ sp
110 POKE x+26960,sp: NEXT
120 FOR x = 0 TO 7: READ sp
130 POKE x+26992,sp: NEXT
140 FOR x = 0 TO 7: READ sp
150 POKE x+27024,sp: NEXT
160 FOR x = 0 TO 7: READ sp
170 POKE x+27056,sp: NEXT
200 POKE 16786,80: POKE 16787,105
210 POKE 16788,1: REM enable sprites
220 POKE 17339,226: REM normnal mag
230 POKE 17229,200: REM sequence fix
240 IF PEEK(16789) > 0 GOTO 260
250 POKE 11943,208: GOTO 270
260 POKE 12454,208
270 POKE 17240,241: TEXT
300 HCOLOR  = 5: DRAW 1 AT 104,40
310 HCOLOR  = 6: DRAW 2 AT 120,40
320 HCOLOR  = 7: DRAW 3 AT 136,40
330 HCOLOR  = 8: DRAW 4 AT 152,40
400 FOR x = 1 TO 25
410 IF PEEK(64885) = 27 GOTO 500
420 POKE 17339,226: CALL 17338
430 FOR y = 1 TO 375: NEXT y
440 IF PEEK(64885) = 27 GOTO 500
450 POKE 17339,227: CALL 17338
460 FOR y = 1 TO 375: NEXT y
470 NEXT x
500 PRINT " that's all.": END
```

```
  10 REM wind chill factor calculator and chart generator
 100 TEXT: INVERSE: PRINT " Wind Chill Factor ": NORMAL
 110 VTAB 6: PRINT " 1 = calculate factor"
 120 PRINT: PRINT " 2 = print chart"
 130 PRINT: PRINT " 3 = exit program"
 140 GET key$: key% = VAL(key$)
 150 IF key% < 1 OR key% > 3 GOTO 140
 160 ON key% GOSUB 1000,2000,200: GOTO 100
 200 POP: TEXT: PRINT " program terminated.": END
1000 HOME: PRINT " enter absolute temperature "
1010 INPUT " on the Fahrenheit scale: ";temp
1020 PRINT: PRINT: PRINT " enter wind velocity in "
1030 INPUT " miles per hour: ";mph
1040 GOSUB 3000: VTAB 12
1050 PRINT " the wind chill factor for"
1060 PRINT " this data is: ";chill: GOTO 4000
2000 HOME: PRINT " press [RETURN] to begin "
2010 PRINT " printing ..."
2020 GET go$: IF go$ <> CHR$(13) GOTO 100
2100 PR #1: PRINT SPC(32);"Wind Chill Chart": PRINT
2110 PRINT SPC(18);"INTERSECT the TEMPERATURE ";
2120 PRINT "across the TOP ROW"
2130 PRINT SPC(18);"with the VELOCITY along ";
2140 PRINT "the LEFTHAND COLUMN": PRINT
2200 PRINT SPC(16);
2210 FOR x = 25 TO -15 STEP -5
2220 x$ = STR$(x): PRINT SPC(5-LEN(x$));x$;: NEXT
2230 PRINT: PRINT: FOR mph = 4 TO 30 STEP 2: mph$ = STR$(mph)
2240 PRINT SPC(15-LEN(mph$));mph$;":";
2250 FOR temp = 25 TO -15 STEP -5
2260 GOSUB 3000: chill$ = STR$(chill)
2270 PRINT SPC(5-LEN(chill$));chill$;
2280 NEXT temp: PRINT: NEXT mph
2300 PRINT: PR #0
2310 PRINT: PRINT: PRINT: PRINT: PRINT: PRINT: GOTO 4000
3000 c1 = 10.4+6.69*SQR(mph)
3010 c2 = (c1-.45*mph)/22
3020 c3 = c2*(temp-91.4)
3030 c4 = c3+91.4: chill = INT((10*c4+5)/10): RETURN
4000 VTAB 20: PRINT " press any key to continue ..."
4010 GET go$: RETURN
```

Wind Chill Chart

INTERSECT the TEMPERATURE across the TOP ROW
with the VELOCITY along the LEFTHAND COLUMN

	25	2Ø	15	1Ø	5	Ø	-5	-1Ø	-15
4:	25	2Ø	15	1Ø	5	Ø	-5	-1Ø	-15
6:	19	13	8	2	-3	-9	-14	-2Ø	-25
8:	14	8	2	-4	-1Ø	-15	-21	-27	-33
1Ø:	1Ø	4	-3	-9	-15	-21	-27	-33	-39
12:	6	Ø	-6	-13	-19	-26	-32	-38	-45
14:	3	-3	-1Ø	-16	-23	-3Ø	-36	-43	-49
16:	1	-6	-13	-19	-26	-33	-4Ø	-47	-53
18:	-1	-8	-15	-22	-29	-36	-43	-5Ø	-57
2Ø:	-3	-1Ø	-17	-24	-32	-39	-46	-53	-6Ø
22:	-5	-12	-19	-27	-34	-41	-48	-56	-63
24:	-6	-14	-21	-28	-36	-43	-5Ø	-58	-65
26:	-8	-15	-23	-3Ø	-37	-45	-52	-6Ø	-67
28:	-9	-16	-24	-31	-39	-47	-54	-62	-69
3Ø:	-1Ø	-17	-25	-33	-4Ø	-48	-56	-63	-71

HACKER'S DELIGHT

TRANSFERRING DATA

In our December issue, we began a series on Z80 data/byte transfers. You may want to read that article again (page 12) as a refresher.

In that issue we discussed the two most common single byte transfers. Here's a double byte transfer -- it's like two consecutive POKEs.

In mnemonics and hex code:

```
LD   HL, $4411
LD   ($FFFE), HL
RET
```

In decimal format:

```
33,  17,  68
34, 254, 255
201
```

Or, the BASIC equivalent:

```
POKE 65534, 17
POKE 65535, 68
```

THE EOS BOOT SYSTEM ROUTINE

Pages 14 and 15 completely disassemble the **EOS boot system** routine. As we discovered with **EZkeys** last month, once the system is booted, the programmer can overwrite this algorithm with his own routines.

This particular routine occupies addresses 63538 through 63733; it uses 196 bytes. It is executed from the EOS jump table at address 64560 (the first jump vector).

When you pull the reset switch, the Operating System is bank switched from a ROM chip into its standard RAM location. Then this routine is JumPed to.

This particular routine requires no incoming set up, *ie*, placing values in certain registers or register pairs before CALLing the routine. It consists of four distinct segments: basic setup, disk drive search, tape drive search, and conclude boot.

Addresses 63541 through 63553 zero out the EOS RAM. This is an old trick that simply puts an ASCII zero in all the bytes of a specified range. The **LDIR** is one of the more powerful Z80 commands. Internally, it is, in fact, a built-in Z80 routine. It even requires a setup just like an EOS routine.

This setup segment of the boot system routine performs several housekeeping functions. Among these, it zeroes out the entire 16K video chip -- addresses 63565 through 63575.

You may want to study the disk and tape drive search segments. It is here that ADAM determines which drive, by an arbitrary priority, contains a medium. It searches disk drive one first, then disk drive two, then tape drive one, and finally tape drive two. If a medium is found, the routine JumPs to address 63688. Here, block zero of that medium is read into a 1K buffer starting at address 51200. Then that address is JumPed to.

If an error is encountered anywhere along the way or no medium is found, the routine JumPs to SmartWriter at address 63682. In fact when SmartBASIC 1.0 INITs a medium, it even puts this three byte JumP as the first three bytes of block zero.

Leaving the routine two registers, **A** and **B**, contain the current drive number. This information is critical for self-booting block zero bootstrap routines. Otherwise, you wouldn't be able to ascertain which drive your booting program was in. Thus, nothing could be accomplished with media.

Another interesting point about exiting the routine is that, in addition to the two registers, address 64879 contains the boot drive value. From SmartBASIC you can PEEK (64879) to see which drive BASIC was booted from.

PICTURE MANAGER PROGRAM

Pages 16 through 18 LIST a rather unique program for storing and retrieving hi-res pictures. It is designed for SmartBASIC 1.0. If you try to execute it using BASIC 2.0, it will simply end.

It automatically determines if you are already in HGR mode. If you are, it won't clear the screen. This way you can RUN the program after drawing a nice hi-res picture without disturbing your graphics.

You can SAVE and LOAD screens plus some other options. The LOAD feature allows you to LOAD a standard RLE (Run Length Encoded) picture, a SmartPAINT picture, or a 10K picture file previously saved with this program. Due to the RLE compatibility, the program starts by asking for a background and HPLOT color.

With the SAVE feature you can save the picture in SmartPAINT format or as a single 10K file. With the SmartPAINT option, you can also clear the area that SmartPAINT uses as a title bar.

The program even allows you to change colors already on the screen. You can change all of one color to another color of your choice. And, you can change the total background color without disturbing the foreground graphics. We included similar options in our SmartPAINT program (from ShowOFF I). The SmartPAINT routines were total machine code for super fast color changes. The routines used by this program, on the other hand, include some BASIC. This notably slows down the color change process. However, you can use this, fairly easy to understand, routine in your own programs.

If you work with HGR graphics much, this is a program that you'll definitely get some use out of. The many features make it well worth the time and effort of typing. When entering a long program such as this, take breaks occasionlly to help prevent those frustrating typos

CHANGING THE FILE DATE

In previous issues we've discussed that each directory entry is assigned a 26 byte control slot within the directory. The last three bytes of each of these slots contains the file date.

One of the SmartBASIC routines sets the file date when BASIC is booted. This default setup occupies addresses 25354 through 25361. The default date is 10 - 13 - 57. In a future issue, we'll include a program that lets you see the file dates from the directory.

The program on page 19 will allow you to change the current date to your preference. The assembly language for the setup routine is detailed on page 22 (middle). The only complex aspect of setting or reading the date is the odd use of the hex system.

DRIVERS FOR YOUR SECOND PRINTER

Page 20 continues our PatchWORK series. The program at the top of the page creates a PR#2 and a PR#3 command for your second printer connected to ADAM via either the Orphanware or the Eve Electronics Centronics parallel interface. The PR#2 command has screen echo just like the standard PR#1 command. The PR#3 command doesn't print anything on the screen. You can use this patch with both SmartBASIC 1.0 and Intel-BEST 3.3. The Z80 routine is detailed in **asmb # 37** at the top of page 22. This is a rather sophisticated printer driver. We'll have more details on it next month.

One of the most significant drawbacks of SmartBASIC 2.0 is that there is no commercial software to enable printing to a second printer. As you might expect, the 2.0 patch is different for STDMEM and EXTMEM. See the two LISTs at the bottom of page 20. Both of these programs create a PR#2 and a PR#3 command.

The program at the top of page 21 will allow you to use the **CNTL + P** function with your second printer from SmartBASIC 1.0. The program in the middle of page 21 will do the same thing with Intel-BEST 3.3.

The program at the bottom of page 21 will modify the EOS so that you can use MultiWrite from Strategic Software with a second printer. Also, you can use this program to allow your PR#1 command to work with your second printer.

TITLE (asmb#33):

EOS Boot System
(basic setup)

Addr:	Label:	Value(s):	Op Code:	Comment:
63538	stack	49, 88, 254,	LD SP, 65112	;set stack
63541	zero1	1, 71, 1,	LD BC, 327	;set byte count
63544		17, 97, 253,	LD DE, 64865	;set write addr
63547		33, 96, 253,	LD HL, 64864	;set read addr
63550		175,	XOR A	;reset accum/flags
63551		119,	LD (HL), A	;zero addrs
63552		237, 176,	LDIR	;begin copy
63554	ports	62, 5,	LD A, 5	;set up
63556		50, 96, 253,	LD (64864),A	;continue
63559		205, 17, 253,	CALL 64785	;EOS get ports
63562	sndOFF	205, 83, 253,	CALL 64851	;EOS all sound off
63565	zero2	62, 0,	LD A, 0	;zero accum
63567		33, 0, 0,	LD HL, 0	;set start addr
63570		17, 0, 64,	LD DE, 16384	;set byte count
63573		205, 38, 253,	CALL 64806	;EOS fill VRAM
63576	bank	58, 24, 252,	LD A,(64536)	;set acca to one
63579		205, 20, 253,	CALL 64788	;EOS bank switch
63582	reset	205, 246, 248,	CALL 63734	;EOS reset devices
63585	init	17, 0, 212,	LD DE, 54272	;set up
63588		33, 144, 211,	LD HL, 54160	;continue
63591		205, 234, 238,	CALL 61162	;EOS init file mgr

TITLE (asmb#34):

EOS Boot System
(disk drive search)

Addr:	Label:	Value(s):	Op Code:	Comment:
63594	deflt	62, 8,	LD A, 8	;default tape one
63596		50, 111, 253,	LD (64879),A	;store drive value
63599	disk1	62, 4,	LD A, 4	;first search start
63601		205, 115, 244,	CALL 62579	;EOS specified status
63604		32, 16,	JR NZ, 16	;if not, then disk2
63606		62, 4,	LD A, 4	;first disk drive
63608		205, 70, 244,	CALL 62534	;EOS find (disk1) DCB
63611		253, 126, 20,	LD A,(IY+20)	;get status byte
63614		230, 15,	AND 15	;mask high nibble
63616		254, 3,	CP 3	;check status byte
63618		62, 4,	LD A, 4,	;first disk drive
63620		56, 66,	JR C, 66	;if status <3 then rbZERO
63622	disk2	62, 5,	LD A, 5	;2nd disk drive
63624		205, 115, 244,	CALL 62579	;EOS specified status
63627		32, 16,	JR NZ, 16	;if not, then tape1
63629		62, 5,	LD A, 5	;2nd disk drive
63631		205, 70, 244,	CALL 62534	;EOS find (disk2) DCB
63634		253, 126, 20,	LD A,(IY+20)	;get status byte
63637		230, 15,	AND 15	;mask high nibble
63639		254, 3,	CP 3	;check status byte
63641		62, 5,	LD A, 5	;2nd disk drive
63643		56, 43,	JR C, 43	;if status <3 then rbZERO

TITLE (asmb#35):

EOS Boot System (tape drive search)

Addr:	Label:	Value(s):	Op Code:	Comment:
63645	tape1	62, 8,	LD A, 8	;first tape drive
63647		205, 115, 244,	CALL 62579	;EOS specified status
63650		32, 30,	JR NZ, 30	;if not, then jpWPR
63652		62, 8,	LD A, 8	;first tape drive
63654		205, 70, 244,	CALL 62534	;EOS find (tape1) DCB
63657		253, 126, 20,	LD A,(IY+20)	;get status byte
63660		230, 15,	AND 15	;mask high nibble
63662		241	PUSH A	;save status
63663		254, 3,	CP 3	;check status byte
63665		56, 18,	JR C, 18	;if status <3 then deflt2
63667	tape2	241,	POP A	;retrieve status
63668		203, 63,	SRL A	;shift accum right
63670		203, 63,	SRL A	;shift accum right
63672		203, 63,	SRL A	;shift accum right
63674		203, 63,	SRL A	;shift accum right
63676		254, 3,	CP 3	;check tape2 status
63678		62, 24,	LD A, 24	;2nd tape drive
63680		56, 6,	JR C, 6	;if status <3 then rbZERO

TITLE (asmb#36):

EOS Boot System (conclude system boot)

Addr:	Label:	Value(s):	Op Code:	Comment:
63682	jpWPR	195, 231, 252,	CALL 64743	;jump to SmartWriter
63685	deflt2	241,	POP A	;prevent stack overflow
63686		62, 8,	LD A, 8	;first tape drive
63688	rbZERO	50, 111, 253,	LD (64879),A	;store boot drive value
63691	beginR	33, 0, 200,	LD HL,51200	;set RAM address
63694		1, 0, 0,	LD BC,0	;clear BC pair
63697		58, 111, 253,	LD A,(64879)	;get boot drive
63700		17, 0, 0,	LD DE,0	;read block zero
63703		205, 158, 250,	CALL 64158	;EOS read device block
63706		202, 239, 248,	JPZ 63727	;if read OK then bootOK
63709	error	79,	LD C, A	;store error code
63710		58, 111, 253,	LD A,(64879)	;get boot drive
63713		230, 15,	AND A	;force tape drive one
63715		254, 8,	CP A	;check if tape one
63717		32, 228,	JR NZ, 228	;if not then beginR
63719		121,	LD A, C	;get error code
63720		254, 155,	CP 254	;check drive power off
63722		40, 223,	JR Z, 223	;if off then beginR
63724		195, 194, 248,	JP 63682	;otherwise goto jpWPR
63727		58, 111, 253,	LD A,(64879)	;get boot drive value
63730		71,	LD B, A	;store boot drive value
63731		195, 0, 200	JP 51200	;start medium bootstrap

```
 10 REM RLE/HGR Picture Manager
100 IF PEEK(259) <> 195 GOTO 10100
110 POKE 16134,27: ONERR  GOTO 10000
120 LOMEM :45000: POKE 16149,255: POKE 16150,255
130 DATA 1,0,0,17,0,0,33,0,116,205,0,253,201
140 FOR x = 65520 TO 65532: READ mc: POKE x,mc: NEXT
150 DATA disk options,clear screen,change colors,exit program
160 FOR x = 1 TO 4: READ m1$(x): NEXT
170 FOR x = 0 TO 15: POKE 18765+x,x: NEXT
180 hm = 255: vm = 158: hh = 0: vv = 0: dd$ = CHR$(4)
200 DATA load file,save screen,catalog,main menu
210 FOR x = 1 TO 4: READ m2$(x): NEXT
220 DATA load RLE,load SmartPAINT picture,load HGR picture,done
230 FOR x = 1 TO 4: READ m3$(x): NEXT
240 DATA save as SmartPAINT file,save as HGR picture,done
250 FOR x = 1 TO 3: READ m4$(x): NEXT
260 DATA tape one,disk one
270 FOR x = 1 TO 2: READ dr$(x): NEXT
280 DATA change ALL of ONE color,change TOTAL background,done
290 FOR x = 1 TO 3: READ m5$(x): NEXT
300 DATA 62,0,230,240,50,255,255,201
310 FOR x = 27600 TO 27607: READ mc: POKE x,mc: NEXT
320 DATA 62,17,17,16,0,33,0,0,205,38,253,201
330 FOR x = 27608 TO 27619: READ mc: POKE x,mc: NEXT
500 IF PEEK(17008) <> 0 GOTO 600
510 HOME: INPUT " enter HPLOT color: ";hp%
520 IF hp% < 1 OR hp% > 15 GOTO 510
530 PRINT: INPUT " window background color: ";bk%
540 IF bk% < 1 OR bk% > 15 OR bk% = hp% GOTO 530
550 POKE 25431,7: POKE 25568,23: POKE 25471,bk%*16+bk%: HGR
600 HOME: FOR x = 1 TO 3: PRINT " ";x;" = ";m1$(x): NEXT
610 PRINT " 4 = ";m1$(4);
620 GET yy$: yy% = VAL(yy$): IF yy% < 1 OR yy% > 4 GOTO 620
630 ON yy% GOTO 1000,510,5000,10100
1000 HOME: FOR x = 1 TO 3: PRINT " ";x;" = ";m2$(x): NEXT
1010 PRINT " 4 = ";m2$(4);
1020 GET yz$: yz% = VAL(yz$): IF yz% < 1 OR yz% > 4 GOTO 1020
1030 IF yz% = 4 GOTO 600
1040 GOSUB 10200: ON yz% GOTO 2000,3000,4000
2000 HOME: FOR x = 1 TO 3: PRINT " ";x;" = ";m3$(x): NEXT
2010 PRINT " 4 = ";m3$(4);
2020 GET ya$: ya% = VAL(ya$): IF ya% < 1 OR ya% > 4 GOTO 2020
2030 ON ya% GOTO 2100,2800,2500,1000
2100 HOME: PRINT " Enter RLE picture filename:"
2110 INPUT " ";pn$: IF LEN(pn$) > 10 GOTO 2100
2120 GOSUB 10400: VTAB 22: HTAB 1: HCOLOR  = hp%
2200 PRINT dd$;"open ";pn$: PRINT dd$;"read ";pn$
2210 GET ii$: IF ii$ <> "G" GOTO 2210
2220 GET ii$: IF ii$ <> "H" GOTO 2210
2230 GET ij$: ij = ASC(ij$)-32
2240 IF ij < 1 GOTO 2260
2250 GOSUB 2300: HPLOT hh,vv: GOTO 2240
2260 GET ij$: ij = ASC(ij$)-32
2270 ON ij < 1 GOTO 2230: GOSUB 2300: GOTO 2270
```

```
2300 ij = ij-1: hh = hh+1: IF hh > hm THEN  hh = Ø: vv = vv+1
2310 IF vv > vm THEN  POP: GOTO 10000
2320 RETURN
2500 HOME: PRINT " Enter HGR picture filename:"
2510 INPUT " ";pn$: IF LEN(pn$) > 10 GOTO 2500
2520 GOSUB 10400: VTAB 22: HTAB 1
2530 PRINT dd$;"bload ";pn$: GOSUB 10600: GOTO 1000
2800 HOME: PRINT " Enter SmartPAINT filename:"
2810 INPUT " ";pn$: IF RIGHT$(pn$,4) <> ".HRP" GOTO 2830
2820 lp = LEN(pn$): pn$ = LEFT$(pn$,lp-4)
2830 IF LEN(pn$) > 6 GOTO 2800
2900 GOSUB 10400: VTAB 22: HTAB 1: POKE 65522,10: POKE 65530,26
2910 PRINT dd$;"bload ";pn$+".HRP": POKE 65525,32: CALL 65520
2920 PRINT dd$;"bload ";pn$+".HR2": POKE 65525,42: CALL 65520
2930 PRINT dd$;"bload ";pn$+".HR3": POKE 65525,Ø: CALL 65520
2940 PRINT dd$;"bload ";pn$+".HR4": POKE 65525,10: CALL 65520
2950 GOTO 1000
3000 HOME: FOR x = 1 TO 3: PRINT " ";x;" = ";m4$(x): NEXT
3010 GET yb$: yb% = VAL(yb$): IF yb% < 1 OR yb% > 3 GOTO 3010
3020 ON yb% GOTO 3800,3500,1000
3500 HOME: PRINT " Enter HGR filename for "
3510 INPUT " SAVEing the screen: ";pn$
3520 IF LEN(pn$) > 10 GOTO 3500
3530 GOSUB 10400: VTAB 22: HTAB 1: GOSUB 10500
3540 PRINT dd$;"bsave #,A29696,L10240"
3550 PRINT dd$;"rename #, ";pn$: GOTO 1000
3800 GOSUB 11000: HOME: PRINT " Enter SmartPAINT filename "
3810 INPUT " for SAVEing the screen: ";pn$
3820 IF RIGHT$(pn$,4) <> ".HRP" GOTO 3840
3830 lp = LEN(pn$): pn$ = LEFT$(pn$,lp-4)
3840 IF LEN(pn$) > 6 GOTO 3800
3900 GOSUB 10400: VTAB 22: HTAB 1: POKE 65522,10: POKE 65530,29
3910 POKE 65525,32: CALL 65520: PRINT dd$;"bsave #1,A29696,L2560"
3920 POKE 65525,42: CALL 65520: PRINT dd$;"bsave #2,A29696,L2560"
3930 POKE 65525,Ø: CALL 65520: PRINT dd$;"bsave #3,A29696,L2560"
3940 POKE 65525,10: CALL 65520: PRINT dd$;"bsave #4,A29696,L2560"
3950 PRINT dd$;"rename #1, ";pn$+".HRP"
3960 PRINT dd$;"rename #2, ";pn$+".HR2"
3970 PRINT dd$;"rename #3, ";pn$+".HR3"
3980 PRINT dd$;"rename #4, ";pn$+".HR4": GOTO 1000
4000 GOSUB 10500: TEXT
4010 PRINT dd$;"catalog"
4020 PRINT: PRINT: GOSUB 10300: HGR: GOSUB 10600: GOTO 1000
5000 HOME: FOR x = 1 TO 3: PRINT " ";x;" = ";m5$(x): NEXT
5010 GET yc$: yc% = VAL(yc$): IF yc% < 1 OR yc% > 3 GOTO 5010
5020 ON yc% GOTO 5100,5400,1000
5100 HOME: INPUT " enter original HPLOT color: ";og%
5110 IF og% < 1 OR og% > 15 GOTO 5100
5120 PRINT: INPUT " enter new HPLOT color: ";nw%
5130 IF nw% < 1 OR nw% > 15 GOTO 5120
```

```
 5200 GOSUB 10400: GOSUB 10500
 5210 FOR x = 29696 TO 34815
 5220 POKE 27601,PEEK(x): CALL 27600
 5221 PRINT PEEK(27601),PEEK(65535)
 5230 IF PEEK(65535) <> og%*16 GOTO 5300
 5240 bb = PEEK(x)-PEEK(65535)
 5250 POKE x,nw%*16+bb: GOSUB 10600
 5300 NEXT x: GOTO 1000
 5400 HOME: INPUT " enter new background color: ";nc%
 5410 IF nc% < 1 OR nc% > 15 GOTO 5400
 5500 GOSUB 10400: GOSUB 10500
 5510 FOR x = 29696 TO 34815
 5520 POKE 27601,PEEK(x): CALL 27600
 5530 POKE x,PEEK(65535)+nc%
 5540 IF x/256 = INT(x/256) THEN  GOSUB 10600
 5550 NEXT x: GOSUB 10600: GOTO 1000
10000 CLRERR: VTAB 22: HTAB 1
10010 PRINT dd$;"close ";pn$: RUN
10100 HOME: POKE 16953,223: IF PEEK(17008) = Ø THEN  POKE 16953,95
10110 PRINT "program terminated!": END
10200 HOME: PRINT " Which drive?"
10210 FOR x = 1 TO 2: PRINT " ";x;" = ";dr$(x): NEXT
10220 GET dr$: dr% = VAL(dr$): IF dr% < 1 OR dr% > 2 GOTO 10220
10230 POKE 16821,8/dr%: HOME
10240 HOME: PRINT " insert ";LEFT$(dr$(dr%),4);" in the drive,"
10300 PRINT " press any key to continue ..."
10310 GET go$: RETURN
10400 HOME: PRINT " one moment please ...": RETURN
10500 POKE 65522,20: POKE 65530,29: POKE 65525,Ø: CALL 65520
10510 POKE 65525,32: POKE 65528,136: CALL 65520
10520 POKE 65528,116: RETURN
10600 POKE 65522,20: POKE 65530,26: POKE 65525,Ø: CALL 65520
10610 POKE 65525,32: POKE 65528,136: CALL 65520
10620 POKE 65528,116: RETURN
11000 HOME: PRINT " Do you want to clear the first"
11010 PRINT " 16 pixels ('y' or 'n')? ";
11020 GET yn$: IF yn$ <> "y" AND yn$ <> "Y" THEN  RETURN
11030 FOR x = Ø TO 19
11040 POKE 27609,23: POKE 27615,x: CALL 27608
11050 POKE 27609,Ø: POKE 27615,x+32: CALL 27608
11060 NEXT: RETURN
```

```
  10 REM  file date changer
 100 LOMEM :28000
 300 DATA  14,0,6,0,22,0,205,216,252,201
 310 FOR x = 27663 TO 27672: READ ml: POKE x,ml: NEXT
 320 s1 = 27663: s2 = 27664: s3 = 27666: s4 = 27668
 350 DATA  205,219,252,237,67,252,255,237,83,254,255,50,251,255,201
 360 FOR x = 27673 TO 27687: READ ml: POKE x,ml: NEXT: g1 = 27673
 500 TEXT: VTAB 2: HTAB 2: INVERSE: PRINT " file date changer ": NORMAL
 510 VTAB 4: PRINT " Which option?": PRINT: PRINT
 520 PRINT " 1 = change default EOS date"
 530 PRINT " 2 = exit program": PRINT: PRINT
 550 GET opt$: opt% = VAL(opt$)
 560 IF opt% < 1 OR opt% > 2 THEN  PRINT CHR$(7);: GOTO 550
 570 ON opt% GOTO 1000,10000
1000 HOME: CALL g1
1010 VTAB 2: HTAB 2: INVERSE: PRINT " default date is: ";
1020 NORMAL: PRINT "  ";: IF PEEK(65531) = 0 GOTO 1100
1030 PRINT " not set": GOTO 1200
1100 du = PEEK(65532): GOSUB 12000: mo = dn
1110 du = PEEK(65533): GOSUB 12000: do = dn
1120 du = PEEK(65535): GOSUB 12000: yo = dn
1130 PRINT mo;"-";do;"-";yo
1200 VTAB 6: PRINT " [return] = change"
1210 GET go$: IF go$ <> CHR$(13) GOTO 500
1220 VTAB 6: INPUT " enter month (1 - 12): ";m%
1230 IF m% < 1 OR m% > 12 THEN  PRINT CHR$(7);: GOTO 1220
1240 VTAB 8: INPUT " enter day (1 - 31): ";d%
1250 IF d% < 1 OR d% > 31 THEN  PRINT CHR$(7);: GOTO 1240
1260 VTAB 10: INPUT " enter year (0-99): ";y%
1270 IF y% < 0 OR y% > 99 THEN  PRINT CHR$(7);: GOTO 1260
1300 eu = m%: GOSUB 12500: POKE s2,en
1310 eu = d%: GOSUB 12500: POKE s3,en
1320 eu = y%: GOSUB 12500: POKE s4,en
1400 CALL s1: PRINT: PRINT " the date is set.": PRINT
1410 PRINT " press any key for menu . . ."
1420 GET go$: GOTO 500
10000 TEXT: PRINT " program terminated.": END
12000 x1 = INT(du/16): x2 = du-(x1*16)
12010 dn = x1*10+x2: RETURN
12500 eu$ = STR$(eu): le% = LEN(eu$)
12510 IF le% = 1 THEN  le% = 2: eu$ = "0"+eu$
12520 e1 = VAL(LEFT$(eu$,1)): e2 = VAL(RIGHT$(eu$,1))
12530 en = e1*16+e2: RETURN
```

```
   1 LOMEM :28000
 100 REM *** PatchWORK ***
 110 REM >>> simple BASIC enhancements and fixes
7998 REM *** PR#2/PR#3 command
7999 REM for SmartBASIC V1.0 or Intel-BEST 3.3
8000 DATA 245,219,64,203,71,40,250,241,211,64,201
8010 DATA 205,11,47,205,78,4,254,13,192,62,10,24,2
8020 DATA 62,0,195,78,4
8030 FOR x = 0 TO 28: READ ml: POKE x+1102,ml: NEXT
8040 POKE 16217,89: POKE 16218,4: REM make PR#2
8050 POKE 16219,92: POKE 16220,4: REM make pr#3
```

```
  10 LOMEM :28000
  50 REM for SmartBASIC 2.0 ONLY!!!
  60 REM for STDMEM only!!!
 100 REM *** PatchWORK 2.0 ***
 110 REM >>> simple BASIC enhancements and fixes
8000 POKE 1648,255: POKE 1649,255
8010 DATA 245,219,64,203,71,40,250,241,211,64,201
8020 DATA 205,248,48,205,70,255,254,13,192,62,10,24,2
8030 DATA 62,0,195,70,255
8040 FOR x = 65350 TO 65378: READ mc: POKE x,mc: NEXT
8050 POKE 1716,81: POKE 1717,255
8060 POKE 1718,83: POKE 1719,255
```

```
  10 LOMEM :28000
  50 REM for SmartBASIC 2.0 ONLY!!!
  60 REM for EXTMEM only!!!
 100 REM *** PatchWORK 2.0 ***
 110 REM >>> simple BASIC enhancements and fixes
8000 POKE 1648,255: POKE 1649,255
8010 DATA 245,219,64,203,71,40,250,241,211,64,201
8020 DATA 205,247,50,205,70,255,254,13,192,62,10,24,2
8030 DATA 62,0,195,70,255
8040 FOR x = 65350 TO 65378: READ mc: POKE x,mc: NEXT
8050 POKE 1716,81: POKE 1717,255
8060 POKE 1718,83: POKE 1719,255
```

```
  1 LOMEM :28000
 50 REM *** for SmartBASIC V1.0 ONLY !!! ***
100 REM *** PatchWORK ***
110 REM >>> simple BASIC enhancements and fixes
8998 REM *** TEXT screen dump for dot matrix printer
8999 REM MUST use in conjunction with PatchWORK PR#2
9000 DATA 126,254,3,200,245,219,64,203,71,40,250,241
9010 DATA 211,64,35,24,239
9020 FOR x = 10164 TO 10180: READ ml: POKE x,ml: NEXT
9030 POKE 18430,180: POKE 18431,39
9040 POKE 18435,78: POKE 18436,4
9050 POKE 18440,78: POKE 18441,4
```

```
  1 LOMEM :28000
 50 REM *** for Intel-BEST 3.3 ONLY !!! ***
 60 REM >>> execute Intel-BEST first <<<
100 REM *** PatchWORK 3.3 ***
110 REM >>> simple BASIC enhancements and fixes
8997 REM *** TEXT screen dump for dot matrix printer
8998 REM *** MUST use in conjuction with PatchWORK DATA/REM fix
8999 REM MUST use in conjunction with PatchWORK PR#2
9000 DATA 126,254,3,200,245,219,64,203,71,40,250,241
9010 DATA 211,64,35,24,239
9020 FOR x = 65359 TO 65375: READ ml: POKE x,ml: NEXT
9030 POKE 18430,79: POKE 18431,255
9040 POKE 18435,78: POKE 18436,4
9050 POKE 18440,78: POKE 18441,4
```

```
 10 REM MultiWrite patch for impact dot matrix printer
 20 REM 1: boot SmartBASIC V1.0
 30 REM 2: RUN this patch, then
 40 REM 3: RUN multiwrite
100 POKE 16149,255: POKE 16150,255
110 DATA 126,254,3,200,245,219,64,203,71,40,250,241
120 DATA 211,64,35,24,239
130 FOR x = 62741 TO 62757: READ mc: POKE x,mc: NEXT
200 TEXT: PRINT " patch enabled ...": PRINT
210 PRINT " run multiwrite program now."
```

TITLE (asmb#37):

PR#2/PR#3 algorithm

```
addr:  Label:   Value(s):        Op Code:        Comment:

1102   outCHR   245,             PUSH A          ;save Accum
1103   check    219,  64,         IN   A, (64)    ;get status byte
1105            203,  71,         BIT  0, A       ;check status bit
1107             40, 250,         JR   NZ, 250    ;if not ready then check
1109            241,              POP  A          ;retrieve Accum
1110            211,  64,         OUT  (64), A    ;send byte to printer
1112            201,              RET             ;RETurn from routine
1113   entry2   205,  11,  47,     CALL 12043      ;CALL BASIC display char
1116   entry3   205,  78,   4,     CALL 1102       ;send byte to outCHR
1119   chkCR    254,  13,         CP   13         ;check for [return]
1121            192,              RET  NZ         ;if not then RETurn
1122             62,  10,         LD   A,  10     ;load line feed ASCII
1124             24,   2,         JR   2          ;skip 2 bytes
1126             62,   0,         LD   A,  nn     ;load special value
1128            195,  79,   4,    JP   1102       ;send byte to outCHR
```

TITLE (asmb#38):

set file date routine

```
Addr:  Label:   Value(s):        Op Code:        Comment:

27663  setup    14,   0,         LD   C,  nn     ;set month
27665            6,    0,         LD   B,  nn     ;set date
27667           22,    0,         LD   D,  nn     ;set year
27669          205,  216,  252,   CALL 6472B      ;EOS set file date
27672          201,               RET             ;RET from routine
```

HACKER'S CONTEST #6

The NIBBLES & BITS Hacker's Contest is a bi-monthly competition. Thw winner of each contest is randomly selected from the correct responses postmarked within the specified dates. No individual shall be named the winner in three consecutive contests. The winner of each contest shall be awarded ten dollars and a free three month extension to his/her NIBBLES & BITS subscription term. Decisions of the judges are final.

Responses for this contest will be considered valid if, and only if, they are postmarked after January 31, 1987 and prior to April 1, 1987. The winner shall be announced in the April issue of NIBBLES & BITS.

Write a SmartBASIC program (it may include machine code in DATA statements) which will draw the standard ADAM fonts in DOUBLE WIDTH on an HGR or GR screen.

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So ... you spent $50 to $150 for your Centronics parallel interface. You paid another $200 to $400 for your impact dot matrix printer. The printer manual list dozens of super-nice features, but you can't access them. Well ... ShowOFF II to the rescue. In no time at all you'll be turning out **extrememly impressive** word processing creations with that powerful printer, your amazing ADAM™, and ShowOFF II.

Yes ... SmartWriter enhancement -- the first in existence. Some programs merely modify the operating system. This limits your printer use considerably.

> Would you like to have the ability to change margins directly from SmartWriter within any document you create? Almost all of this issue of "NIBBLES & BITS" was printed directly from SmartWriter with a Panasonic printer. You can even change the line spacing in your impressive documents ... and so much more.

You can use Pica, Elite, Compressed and Double Width modes. You can use true superscript and true subscript from SmartWriter. You can use **boldface** for emphasis. In fact, you can use nearly ALL of the functions outlined in your manual.

Even more, the program that modifies SmartWriter, called WriterMATE, is a mini utility program itself : self-booting, all machine code, fast loading. With it you can rename your catalogs, rename files, delete files, and initialize the directory -- the essential functions that were left out of SmartWriter.

Then, when you exit to SmartWriter (from WriterMATE) you'll immediately notice the changes. We installed an entirely different (more appealing) color scheme. Even the screen color changes are different. You can now type almost any keyboard characters in STOREing your files. The CLEAR bug is fixed that causes SmartWriter to lock up.

And, there are even more SmartWriter improvements. Have you ever noticed how the screen sometimes gets offset to the left? Now all you have to do is press WILDCARD to correct the problem. Do you ever get tired of repeatedly pressing the up and down arrow keys for scrolling screens? Now you can just press **CONTROL + T** to move five screens toward the top of the document. And, press **CONTROL + B** to quickly move five screens toward the bottom of the document. And, a feature is even included that LOCKs only the alphabetic keys.

Sound good??? It's only $19.95 to non-subscribers and **just** $14.95 to our subscribers. What do you need? Requirements: ADAM, Centronics parallel interface, Panasonic KX series printer, Revision 80 SmartWriter, and a 64K expander.

PRODUCT REVIEWS

PRODUCT:	RAMDSK
MANUFACTURER:	WALTER'S SOFTWARE
MEDIA TYPE:	datapack/disk
GRAPHICS/SOUND/DESIGN:	N/A
INSTRUCTIONS:	93
USEFULNESS vs. PRICE:	95
RECOMMENDATION:	highly recommended
PRICE:	29.95
RATED BY:	staff

This powerful program lets you use your 64K expander like a super fast disk drive from SmartBASIC V1.0. You can use all the normal BASIC OS commands, SAVE, LOAD, BSAVE, BLOAD, INIT, CATALOG, etc. If you program in BASIC a lot and you have the 64K expander, you should certainly give this software a lot of consideration.

We did notice that it is incompatible with our Intel-BEST, Intel-LOAD, and our EZkeys program (from last month's issue). We'll have fixes for this next month. **RAMDSK** adds an extremely useful dimension to BASIC programming.

PRODUCT:	LAB MOUSE
MANUFACTURER:	REEDY SOFTWARE
MEDIA TYPE:	datapack/disk
GRAPHICS/SOUND/DESIGN:	95
INSTRUCTIONS:	95
USEFULNESS vs. PRICE:	98
RECOMMENDATION:	highly recommended
PRICE:	12.95/10.95
RATED BY:	staff

Once again, REEDY SOFTWARE has released an exceptionally good BASIC game. As with their other popular packages, this one features fine graphics and uses sprites. With **LAB MOUSE** you have the perspective of a mouse stuck in a maze hunting for the morsel of cheese. You move around in the maze (you can only see a few of the walls at a time) using the arrow keys. This game includes five skill levels. It's very challenging even on level one. With all but the highest two levels, your footprints are left as markers so that you can tell where you've already been.

LAB MOUSE is randomized so that EVERY game is a different one. This is another REEDY game that will keep you playing for hours.

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PRODUCT LIST

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☐☐☐ Intel-LOAD V1.Ø
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☐☐☐ Intel-LOAD V2.Ø
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You must boot your own SmartBASIC first in order to use the volumes in this library. All programs will speed load. Each volume (except the utility volumes) is controlled by a user friendly ramdisk (does NOT require the 64K expander) central menu.

N&Bgames Ø1: An assortment of text adventures, board games, and animation games -- 13ØK of files.

N&Bgames Ø2: An assortment of text adventures, board games, and animation games -- 155K of files.

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Pinball Construction/ Hardhat Mac: Best of Electronic Arts (latest version with two demo games).

ADAMLink II: Supports uploading and downloading of SmartWriter compatible files. Includes U/D-load instructions. Requires ADAMLink modem.

Jeopardy: Most popular ADAM game with great graphics.

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CP/M games Ø2: 25 games.

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