NIBBLES & BITS

the comprehensive monthly newsletter for ADAM users

ADAM™ LIVES!

P.O. Box 37
Oak Hill, WV 25901

NIBBLES & BITS

A
D
A
M

A
D
A
M

A
D
A
M

A
D
A
M

A
D
A
M

A
D
A
M

DIGITAL   EXPRESS

PUBLIC NOTICE

"NIBBLES & BITS" is published monthly by DIGITAL EXPRESS.   Individual issues may be purchased for the current month or for a back issue for $3.50; the *premier* issue was July, 1986. The standard subscription rate for one year (12 issues) is $22.00 in the USA, its possessions, and Canada; and, the annual rate is $30.00 in other foreign countries. The standard subscription rate for six months (6 issues) is $12.00 in the USA, its possessions, and Canada; and, the semi-annual rate is $16.00 in other foreign countries.   All subscription issues are sent by U.S. mail, FIRST CLASS. Issues are typically mailed during the last calendar week of the issue month.

We welcome contributions of original reviews, programs, articles, questions, and comments. Please include your subscription ID number from your mailing label on all written correspondence to us.

Your subscription ID number is on the first line of your mailing label (affixed to the newsletter). It is a 10 digit code. The first four digits are the month and year of the final issue in your current subscription. Following the ID number is a brief message. If this is your final issue, the message will read "FINAL ISSUE!!!". If this is your penultimate (next to last) issue, the message will read "TIME TO RENEW". Otherwise, the message will apprise you of the exact number of issues remaining in your subscription (excluding the current issue). Please verify this information each month.

To insure that you don't miss any issues, please renew early and let us know promptly of any address change.   Please include your subscription ID number on the address change notification (you can get a free address change kit from your local US post office).

DISCLAIMER

DIGITAL EXPRESS

CREATIVE COMPUTING
for the ADAM

EDITOR'S NOTE

You may have noticed that I generally reserve this column for a sort of *pep talk*. This month I'm simply going to substantiate that I'm not invariably given to redundant, tautological, pleonastic, reiterative discussions on the sanguine prospects for our powerful, yet orphaned, ADAM computer.

It is certainly no esoteric fact that many of today's specialized professions have their own jargon and that the technical lingo is blithely interspersed in conversational bandy. A sesquipedal penchant isn't even an appreciative prerequisite.

Using medicalese, one could describe the quality of "tired but unable to sleep" as "torporous but ahypnic". On the lighter side, other scientific medical terms are more commonly used. For instance, "flatulence" (intestinal gas), "halitosis" (bad breath), and "lumbar region" (lower back) are euphemistic alternatives.

Have you ever noticed the reaction of a non - computer users to a publication such as N&B? It's almost the same as most of us would have to JAMA (Journal of the American Medical Association). When you hear the word "calculus", do you first think of an advanced field of math or a pathological stonelike mass?

There is a purpose to my atypical slant this month -- method to the madness. It wasn't long ago, during a postprandial chat, that I heard a retort that took me aback. The debate was over shortcomings in our educational system. "It's not the hardware I'm concerned with, but the software", rejoined a fellow whose knowledge of computers could, at best, be quantified as *nil*.

There I sat, nearly agape, ruminating over his deft insult and the alloyed connotation of two computer terms. Hardware, he implied, was schools, gyms and the like. Adding the term "software", he intimated that the faculty was bunch of incompetent dolts. I'm something of an educator, myself.

While we refer to disk drives, speech synthesizers, memory expansion cards, and high speed printers as "hardware", the rest of the world uses the term to describe the physical structure of some entity. While we imply computer programs (such as ADAMcalc and SmartFILER) when we discuss "software", others use the term to indicate any type of system management.

Till next month ...

EDITOR

Solomon Swift

N&B NEWS

□□□ Three new volumes of SmartPIANT pictures are now ready. These are Art Gallery 1 (compiled by Reedy Software), N&Bpix010, and N&Bpix011. You now have 175 hi-res public domain pictures to choose from for use with SmartPAINT. This makes ShowOFF I the best supported commercial title for the ADAM computer. The picture files can also be used in your own programs and with our upcoming PowerPAINT program.

□□□ We now have a list describing all our public domain software. It is available free with an SASE (business size envelope) with 56 cents in stamps. You can also get a complete list of all the SmartPAINT PD picture volumes with descriptions and reduced hardcopies for an SASE with 56 cents in stamps.

□□□ We are currently sponsoring a special N&B renewal offer. Renew for 12 months by the 15th of December and receive a coupon for a FREE public domain volume of your choice. You must have fewer than nine issues remaining in your current subscription to qualify.

□□□ DIGITAL EXPRESS has just released another commericial software package for ADAM. This latest one is a collection of ramdisk utilities for use with **MegaDISK 1.0** and a standard 64K expander or (provides much more power with) ORPHANWARE's new "BIG" XRAM expanders, MX-256 and MX-512. See the ADAM ACCESS department for more details on **XRAMpak I**.

□□□ Power**PAINT**, by DIGITAL EXPRESS, is almost finished. We're adding last minute features and completing the instruction manual. We expect to start shipment on the 18th of November.

Here are some of the features. It will load RLE files, SmartPAINT files, GRAPHIXPAINTER files, PaintMASTER files, and SmartLOGO picture files. It will store files in SmartPAINT format and two z80 formats (both as single files). As with all of our second generation software, you get files simply by pointing to them on a graphic file folder. Of course, the SmartKEY labels are used at the bottom of the screen just like Coleco software.

You can also load FontPOWER font sets and CLIPPER clip art files. You can even load SpritePOWER sprite sets for use as miniature clip art. You can print fonts at normal size, double length, or double width. It comes with standard, bold, and script font sets. It even comes with a 60 column print option. And, several sets of graphic fonts are included for rotating, text overlay, and special effects such as headlines. As a matter of fact, you can even use your own hi-res shape tables from SmartBASIC. This creates the possibility of a limited CAD environment.

The total picture is four HGR screens. This makes for nice letterheads, customized station-ery, etc. You can scroll up, down, left, or right within the picture. It includes a ruler option for precise hardcopy correspondence. It includes a variety of fast color change options. You can enlarge, copy, move, or erase sections of your pictures.

It includes special functions such as circles (empty and filled), easy polygons, ellipses, and arcs of circles. It even includes a feature for drawing a calendar of the month and year that you specify.

It includes dozens of hardcopy print options: various lengths, various widths, mirror image, reverse image, sectional hardcopy. And you can print the currently displayed screen or the entire picture. Printing requires a Centronics parallel interface (such as the EVE Electronics SP-1 or the ORPHANWARE PIA2) and an Epson FX or IBM 5152 compatible dot matrix printer.

This machine language program requires at least a 64K memory expander. With the ORPHANWARE MX-256 or MX-512 memory cards, you also get an on-line ramdisk for *super fast* file manipulation.

The retail price on this powerful graphics design package is just $44.95. And, N&B subscribers can get it for just $35.95.

Until the 27ᵗʰ of November we are offering a special discount value for N&B subscribers who have purchased **ShowOFF I**. Send in your order with a photocopy of your **ShowOFF I** receipt (if you've lost your receipt, we can verify the purchase through DIGITAL EXPRESS). You can choose either a $5.00 discount on the purchase or get a FREE SmartPAINT volume of PD pictures (of your choice). This special offer will NOT be repeated. Please note that the package may be placed on backorder, if not ready when you order. If you order with other items, we'll only hold back the PowerPAINT as a backordered item.

□□□ Next month we'll take a look up some of DIGITAL EXPRESS's software projects for 1987.

□□□ If N&B is mailed to you outside of North America (England, Isreal, South Africa, Austrailia, West Germany, Iceland, etc.), we will extend any dated deadlines for you by 30 days. This includes special offers and the standard DIGITAL EXPRESS product list items.

ADAM NEWS

□□□ Whenever you place an order with a firm in response to news or advertising in N&B, please let that dealer know that you read about it in **Nibbles & Bits.**

□□□   John Lingrel of ORPHANWARE reports that several ADAM owners mentioned reading about his new items and lower prices in N&B last month. In appreciation, he has some **very** low prices, for a limited time, just for N&B subscribers. See the ADAM ACCESS department of this issue!

□□□ Hacker's Helper (vol I) is a relatively new publication for serious ADAM programmers. This very detailed study of ADAM's EOS is available for just under $20 from Mel Ostler and the NewMArizTexaCal Programmer's Group. See this months BULLETIN BOARD for the address. We plan to have a review of this informative, 175 page, book next month.

□□□ Terry Fowler has recently updated his FILE PRINTER program. We carry the latest version (V1.1) in our product list. Among the improvements is a LIST PRINTER function which is particularly useful for printing tabular data. Effective November 30ᵗʰ, Mr. Fowler is ending the special introductory price. The new retail price will be $14.95. We will raise our price (at the end of November) accordingly; get yours today, before the price goes up.

□□□ Amil Dillinger, editor of the HIGHLIGHTS newsletter, reports that their group, 1986 AUG, will no longer stock Coleco parts due to the high capital needed for an efficient dealership.

□□□ Walters Software Company has recently released a ramdisk for use with the ORPHANWARE 256K expander, RAMDSK - 256. Walters has also updated their Media-Aid utility package to support the larger ramdisk.

□□□ Both Walters Software and DIGITAL EXPRESS have developed ramdisks for the variety of XRAM cards now available. These ramdisks accomplish the same task but do so with dramatically different EOS patches. The primary difference from the end user perspective is the addresses where the patches are stored. Because these addresses are different, certain incompatibil-ities are noted when using supportive software.

You can NOT use TurboCOPY, XRAMpak I, many of the N&B EOS patches, or standard binary converted BASIC programs with the Walters Software ramdisks. You can NOT use Media-Aid with the DIGITAL EXPRESS ramdisks. We published a simple POKE trick in the March 1987 issue of N&B (page 10) that allows you to BRUN ordinary binary converted (fast loading) BASIC programs with the Walters ramdisk. Also note that the Walters ramdisk comes with BASIC and includes a compatible binary converter.

☐☐☐   D.L. Decker Enterprises has a limited number of Coleco disk drives available for $195 (plus $7 for shipping). Included are the disk drive, ADAMnet cable, Disk Manager, manual and a FREE public domain game.

☐☐☐   A couple of months ago we reported an incorrect date for the premier issue of E&T SOFTWARE's new monthly newsletter, ADAM'S ALIVE. Mr. Jenkins, the editor, tells us that premier issue should be mailed at the middle of November.

The annual subscription rate (12 issues) is $20 in the USA and $28 in foreign countries. In addition to the discounts subscribers will get on E&T's extensive line of ADAM products, you could WIN A FREE ADAM DISK DRIVE. Join ADAM'S ALIVE by 12-5-87 and you could win the free disk drive. The drawing will be held on 12-6-87 and the winner will receive his/her disk drive before Christmas.   The winner will also be announced in the January issue of ADAM'S ALIVE.

☐☐☐   Until December 31st, VIDEO SONGS has a special gift for purchasers of BOTH their "BEATLES" and "POTPOURRI" albums. When you purchase both disks, they'll also send you a free BASIC bonus pack with six menu - driven public domain programs.   The VIDEO SONGS' albums require VideoTUNES by FutureVision.

☐☐☐   Alan Neeley, of ADAM-LINK of Utah, is offering the CNET BBS as FREEWARE for $20. This is a comprehensive BBS written primarily in BASIC by many authors (primarily Derick Threat). It comes on 3 disks and the price includes preliminary docs and any help needed to get the system running on your ADAM. The BBS requires that your have at least two disk drives to run the system effectively. He will also build an auto - answer device for $20 ($15 when purchased with the BBS). There are a few minor bugs with the system, but Mr. Neeley will keep all purchasers notified of any updates and how to obtain them.

☐☐☐ This is a good time of the year to send for the catalogs of ADAM retailers. E & T SOFTWARE and MW Ruth Company have each recently started mailing their new winter catalogs. Each is *very impressive*.

☐☐☐   Last month we listed two mail order companies that sell the *excellent* Panasonic KXP - 1080i below $150 (plus shipping). Here's another one that offers the excellent price.

IMS
Attn: Randy Sites
12400 Olive Boulevard
St. Louis, MO 63141
1-800-426-5258

☐☐☐ More new games for ADAM users! TeleGames U.S.A. will be distributing all the Activision titles on data pack and disk for the Coleco ADAM. For those who enjoy games, this is great news. We should be seeing a variety of enjoyable graphic games written in machine language. Some of these are already available for other computers and game systems.

See this month's BULLETIN BOARD for their address. Also, E&T SOFTWARE and MW Ruth Company carry the Telegames releases.

☐☐☐ ORPHANWARE has several exciting projects "*in the works*". They are working on an ADAM compatible 720K 3.5" disk drive--very fast. They are working on a chip that will permit multiple disk drives. This one will be very low - priced; you'll have the option of installing the chip yourself or sending your memory console to them. And, ORPHANWARE is also working on an interface for attaching a 20 meg hard disk to ADAM.

ORPHANWARE currently has a double sided disk drive upgrade availble for $125. Your drive will be returned with the new heads and programs for formatting for EOS or CP/M -- two disks at the same time. They also have double - sided disk drives available for $240.

Finally, ORPHANWARE is now offering a "short kit" for making your own 64K expander. The kit is only $10 and comes with the PC board, test program on disk, instructions, and a list of vendors for obtaining the chips.

☐☐☐ Barry Wilson is working on starting a local ADAM users group in the St. Louis (MO) area. He asks that ADAMites with zip codes 630xx, 631xx, and 633xx contact him.   His address is:

Barry A. Wilson
1566 Wood Lake Drive
Chesterfield, MO 63017

☐☐☐   Don Perlman of In House Service Reps is shipping their double sided disk drives now. He plans to offer 256K and 512K memory expanders in the next few months.

☐☐☐   A word of warning: When ordering from ADAMLAND (of Lander, WY), *caveat emptor* (let the buyer beware). This is the first time that we've ever used this warning.

SHOPPING
FOR ADAM

(part 2)

by Patricia J. Herrington

Last month's column was about where to find hardware; this month we'll talk about where to find software. You will note that many of the sources are the same as those for hardware. They bear repeating, however.

There are three different types of software for ADAM: original Coleco software, public domain software, and third party software. Original Coleco software is increasingly difficult to find, but the price is right when you do stumble across it. Still, prices vary from source to source -- it pays to shop around.

Some of the best sources for Coleco Software are ALPHA-1, M.W. Ruth, NIAD, and 1986 AUG. Amil Dillinger, of 1986 AUG, has a good supply of ADAMcalc for under $10. The price includes the manual without the binder. This is OK; the manual is crucial to using the program, but you can always get a binder.

A word of caution here. A few sources sell "backup" Coleco software with which you receive no manual. This is probably just fine for games; but, you do not want to buy the heavy-duty programs (ADAMcalc, SmartLOGO, CP/M 2.2) without their thick, comprehensive manuals. You might as well throw your hard - earned dollars to the wind. You can purchase instructions for games and simpler Coleco software form Norman Castro.

Amercian Design Components is selling the Address Book Filer and Autodialer (they come together) very reasonably, but without the manual. You can also get these instructions from Norman Castro.

The second type of programs is PD (public domain) software. This is not copyrighted, and can be legally shared or traded. A few Coleco programs are PD (Super SubRoc, Jeopardy, Troll's Tale, etc.).

There is no dearth of PD software. It is inexpensive, plentiful, and easy to find. Of course, it does vary in quality; but that's all part of the adventure. You can find PD software galore from any user's group, and many retailers carry it as well. You can also download PD programs from information services such as CompuServe and PLink, and from bulletin board systems (providing that you have a modem). And, you can find PD program LISTings in various books, magazines, and newsletters.

The remaining category of ADAM programs is third - party software. These programs are developed for the ADAM community by independent programmers. Again, the quality varies; but this is where the EXCITEMENT is, folks! Whoever says "ADAM is dead" is just not paying attention. New software comes out regularly, and it keeps getting better and more creative, too.

What kind of software can you purchase from third party developers? Here are some highlights (in alphabetical order).

ADAMAGIC Software is in the process of revamping all their 'old' software and beta - testing several new titles. In the works is BRAIN GAMES, a collection of five board games (including such favorites as Backgammon and Othello), all done in hi-res graphics. Also on its way is ARCADE ACTION, which, as its name implies, is a collection of arcade - style games. They also have several text adventures; they're even considering an adventure pack for Adults Only ... a first for ADAM, as far as I know.

Digital Express, or DEI, has several exciting new packages out that will be of particular interest to budding programmers, or to anyone who's at all interested in graphics. ShowOFF I is quite simply the most versatile paint progam on the market, allowing you to design your own high or low resolution graphics, or to alter RLE pictures from a PD library. You can use these pictures in your own programs or print them out; though you need a dot - matrix printer to print hi-res graphics. ShowOFF II is an advanced SmartWriter enhancement for use with a dot - matrix printer. FontPOWER and its counterpart, SpritePOWER, allow you to design your own fonts (letter shapes) and sprites (animated graphics) for amusement or for use in your own programs. Newest of DEI's packages is CLIPPER, which "introduces the concept of 'Clip Art' to ADAM". It lets you clip a section of one hi-res screen and put it on another, for use in your own programs.

All these packages are superbly documented, and very professionally done; their most recent releases strongly resemble Coleco software. Each package contains demos and other extras as well. DEI has many other ingenious programs ... they seem to be generating them at about the rate of one every four or five weeks.

E&T Software is very reliable and carries third - party software, including Strategic titles such as MicroWorks (the integrated software system designed to resemble AppleWorks) and ProofReader (a machine language spelling checker for ADAM). They also carry public domain software, and are on the verge of launching a brand new newsletter for ADAM users, ADAM'S ALIVE.

Patricia J. Herrington is the editor of the monthly ADAM periodical, MOAUG NEWS. We'll continue her series from that newsletter next month.

OVER THE PHONE LINES

by David E. Carmichael

As you may already know, the FCC (Federal Communications Commission) is proposing to place an additional, and substantially higher, access charge on enhanced phone service providers. Under the definition that the FCC proposes to adopt, networks providing remote computing, data base services, electronic mail and other services would be considered "enhanced service providers".

If implemented as proposed, this access charge would probably force the networks to increase their public network dial-in rates by more than $4.00 per terminal hour for daytime AND evening/weekend rates. (Access charges have no "time-of-day" discounts. This would mean that systems like PLink would have to raise their rates from a low $4.25 per hour to $8.25+; and systems like CIS would go up to around $13.00+ per hour.) The networks would then pass the additional costs onto its subscribers (i.e., PLink, TELENET, GTE, MCI-MAIL, ect...), who then would be forced to pass it on to you!

The Commission has not yet adopted the proposal; the hearing date is set for the latter part of October. I know that one of the things that has helped keep the ADAM alive is telecommunications! I personally feel that if it were not for these systems, the ADAM would not be as alive today as it now is.

While it MAY BE too late to write the FCC directly, it is never too late to write to your local CONGRESSMAN & SENATORS in Washington, DC! This is an issue that will effect ALL computer telecommunication users in one form or another!!

If these charges do go into effect, it will mean that most ADAM users that now use them will be forced off due to the high on-line usage rates!

I personally hope that a number of LOCAL ADAM BASED ELECTRONIC BULLETIN BOARDS will keep running so that ADAM owners can still have this form of electronic information sharing.

Well till next time when I hope to have a review of one of the local BBS's ..... HAPPY COMPUTING!!

David E. Carmichael is the ADAM Section Six Chairman in the Computer Club with PLink.

CP/M TIPS

The idea for the following column was derived from an article by the Vancouver ADAM Club.

CP/M is a rather involved programming environment. There are numerous aspects to it and thousands of public domain programs available for its users. One of the first puzzles is the file extensions.

A file extension is a short, up to three characters preceded by a period (a separator), descriptive suffix to the filename proper. One of the prime benefits for using file extensions is that they can be utilized to differentiate related files. For example, "COLOR.COM" could be a *command* to change screen colors and "COLOR.DOC" would be the corresponding documentation for using the file.

In truth, the number of file extensions is virtually endless. But, some are more common; these are listed below.

```
.ARC = archived file
.ASM = assembler source file (mnemonics)
.BAK = ED source backup
.BAS = BASIC source file
.COM = transient command file
.DOC = documentation / instruction file
.HEX = hex machine code
.INT = intermediate code
.LBR = libraried file
.PAS = PASCAL source file
.PLI = PL/I source file
.PRN = printer listing
.REL = relocatable module
.SYM = SID symbol file
.TXT = text file
.*Q* = squeezed file
.*Z* = crunched file
```

".COM" files are utility programs; they are referred to as transient because they do not reside permanently within RAM. On a good public domain disk, all the transient command files will have corresponding ".DOC" files for the users understanding. Some command files can be invoked simply by typing the name and pressing <RETURN>. Others, have a specific syntax requiring certain parameters.

An ".ARC" file has to be DEARCed or UNARCed. A ".LBR" file is a collection of several files grouped into one large file. These files have to be DELIBRed. Often, the resulting library of files will contain some "squeezed" or "crunched" files. Squeezed files have to be UNSQZed, and crunched files have to be UNCRNed.

The purpose of librarying, squeezing and crunching is to make maximum use of disk storage space for portability. Once the end user has gone through the time - consuming installation process, the collection of files is ready for easy use.

EXPLORING CP/M 2.2

by Guy Cousineau

In the first article, we covered the format of a file control block. This one covers the use of the file control blocks by the BDOS (Basic Disk Operating System) and by applications programs.

CP/M has two default partial file control blocks at 5CH and 6CH. These are only 16 bytes each for a total of 32 bytes. When the additional data is added to FCB #1, it will overwrite the data in FCB #2. It is the programmer's responsibility to move the data in the second one if it is required.

Suppose you have a type of program which has an option to pause the display every few lines as specified by the user. It might have a syntax such as "TYPE file.typ 20", where "file.typ" will be displayed 20 lines at a time. The CCP will place the filename in FCB1 and the page length in FCB2, at 6CH. This data only needs to be read into the program and may then be overwritten. The program could read the data, store it in memory or in a register and then proceed to open the file at 5CH. Opening the file will use all the space between 5CH and 7CH.

Taking another example, using "PIP A: file.one=B : file.two", file one and file two will be placed in the 2 FCB's, but we need to keep track of both files while the transfer is taking place. Here we need to move the second FCB somewhere else in RAM before the opening the first file. This is simply done by setting aside a 32 byte buffer somewhere in RAM with a DS instruction and moving the DATA via an LDIR command. When we access file one, we point to the FCB at 5CH and point to the reserved RAM area for file two.

How much data needs to be in the FCB before we open a file? We need the drive code, the file name, and the file type (for normal sequential operations). The reserved system bytes at FCB+13, FCB+14, and FCB+15 should be set to zero. The record number at FCB+32 also needs to be set (zero for most applications). The notation "FCB+??" just means so many bytes from the start of the FCB (the byte displacement).

When the BDOS opens a file, the rest of the data is filled in from the directory entry, which is 32 bytes long. Every time a file is closed by the BDOS, the updated information is re-written to the directory for further reference.

When a request for a sequential read or write is issued (BDOS functions 20 and 21), the record number specified at FCB+32 is read in and the record counter is incremented to prepare for the next read/write request. When these requests are made, the address of the FCB to be used must be sent in the DE register pair when CALLing the function. The read / write functions exit with a status code in the accumulator. If this value is zero, then the operation was successful; otherwise there was an error. This is useful when reading to determine whether or not we have reached the end of the file.

Where does all this data go? The BDOS sends it to the DMA (Direct Memory Access). This is a 128-byte buffer used to write the record. CP/M provides a default DMA from 80H to FFH. In the next article, we will cover changing this location so that we don't have to move information back and forth. Even the default DMA is useful in itself for some programs. With "COPY", for example, you can read one record from a file into the DMA and then write it to the output file, until the entire file is transferred. That's fine if your copying from one drive to another, but what about copying to the same drive? You would have to change disks every record, increasing your chances of error.

What if a file is over 16K and has more than one extent? The BDOS handles all of that for you. If the end of one extent is reached (128 records), the BDOS looks for the next extent of the file and opens it, if found. This is true for read and write operations.

The next article will cover using the DMA, moving data, and using larger buffers.

CHOOSING ADAM PERIPHERALS

by Solomon Swift

I'm asked rather consistently which particular peripherals I recommend in adding to the basic ADAM. This month, I'll try to tackle this one.

First, as something of a disclaimer, each ADAM owner has his own priorities in expanding his system. Your computer budget and particular interests play critical roles in expansion. In selecting a peripheral, software compatibility is crucial. In fact, you should select the software first (in cases where this can be applied) and THEN select compatible hardware.

Let's assume that you *just* purchased your ADAM. It comes with SmartWriter, SmartBASIC V1.0, and Buck Rodgers (the super game). The first item you should get is a good copy program and backup your BASIC tape. There are a number of good copy programs; "UtilCOPY" by Wayne Motel of NIAD and "EZcopy" by DIGITAL EXPRESS are two good PUBLIC DOMAIN backup utilities.

The first peripheral that I suggest is a second digital data drive. They are cheap (used to sell for over $100, now only ten to thirty dollars). You will have twice the auxilliary storage. And you have the security of protection against the heartache of mechanical failure in a storage drive. If, for some reason, one drive fails to work you can still use your ADAM. In fact, in addition to merely a second tape drive, I recommend a third (to be kept in storage for emergencies).

Next I would suggest that you get a Centronics parallel interface for connecting ADAM to a standard dot matrix printer. Both EVE Electronics and ORPHANWARE sell these. And, they both access the same I/O port (64d, 40H) permitting complete software compatibility. Both companies produce high quality products. The EVE unit (SP-1 or SP-1P) plugs into the expansion port on the right side of the memory console; it's housed in a nice universal plastic case. The ORPHANWARE unit (PIA2) plugs into the middle slot inside the memory console. Both units cost about the same; the PIA2 is a little cheaper (even with the added cost of a printer cable). Be sure to get a Centronics cable with your purchase. The one inch wide, flat line cable connects the interface to the printer.

There are two further considerations here. The PIA2 plugs inside ADAM leaving the *important* bus extender expansion port on the right side of the console open. You might want to plug the EVE clock / speech synthesizer, a serial interface, or other interesting cards into that expansion port. For this reason, I would recommend the PIA2 over the SP-1P. With the PIA2, though, you will need to cut out a couple of the vent slots in order to be able to connect the cable to the card.

- more next month -

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. For the benefit of all readers my reply, where applicable, is generally more detailed than any written reply. Unless the reader requests differently, street addresses are omitted.

FONT DESIGN TIPS

SmartBASIC V1.0 reserves CHR$(31) as a custom character. You can POKE your eight bit image values into addresses 17226 thru 17233 and then enter the TEXT command to effect a change.

When using FontPOWER (by DIGITAL EXPRESS) try this:

```
POKE 17126, 240
BRUN xxxxxx.fnt
TEXT
POKE 56329, 5: CALL 56320
```

This puts your custom fonts into the locations used by INVERSE. You can have ADAM's default fonts on the same screen with yours. This can be interesting with graphic fonts like those in the Coleco games.

Leonard F. Adolph
Flint, MI

EOS REVISIONS

The ADAM Technical Manual says that there are several versions of EOS in circulation. Do you know if this is the same as the revision number of SmartWriter? If not, how do you find it, and what was the last one?

Arnold Wagner
Salem, OR

IN RESPONSE: The revision numbers of EOS are not accurate. To the best of my knowledge, the SW# and the EOS# are not related; and I believe that all ADAMs come with the same EOS. The number can be determined by PEEKing address 64864 (96, 253). The standard number is "5". The DOS (Disk Manager version) number is "7"; but there are only VERY minor changes from version "5". The EOS that comes with SB 2.0 is also number "7" and it is a major rewrite; but, all the jump table addresses are the same.

GraphixPAINTER to SmartPAINT

Is there a way to convert pictures stored in GraphixPAINTER format to SmartPAINT format?

Dave McIntosh
London, Ontario

IN RESPONSE: Yes. RUN "Pix.MGR" (from ShowOFF I). Select the EXIT option (#4). In immediate mode enter "BLOAD xxxxx.H2c, A29696". Then enter "BLOAD xxxxx.H2p, A34816". Then enter GOSUB 10600. Now just RUN the program again to store it in SmartPAINT format.

BYTE-SIZED BASIC

SmartBASIC 2.0 PATCH

Several months ago we published a patch for SmartBASIC 1.0 that allows formula branching for GOTO and GOSUB. There is also a similar program LISTed in the Hacker's Guide To ADAM (vol 2). For instance, "10 j=5: GOTO j*100". One of our subscribers recently sent the following patch for SB 2.0. It works for both GOTO and GOSUB.

```
10 REM GOTO formula branching patch
15 REM for SmartBASIC 2.0
20 REM by Thomas S. Warren
30 REM Springfield, OH
100 DATA 0,205,158,41,34
110 FOR x=9069 TO 9073:READ c
120 POKE x, c:POKE x+88, c:NEXT
130 POKE 9156, 213: POKE 277, 227
140 POKE 286, 227
```

HI-RES SHAPES

(part 4)

Now that we've taken a fairly detailed look at the vectored bytes for a hi-res shape table, let's examine how to use one. First, the shape table (index and patterns) must be POKEd into RAM.

For most uses, the best practice is to set the lower end of memory up high enough to make room for the table. The default LOMEM setting (for SB 1.0) is 27407. If you set it up to 28000, you'll have room for a 593 byte table. Then just POKE the values in the addresses between 27407 and 28000. The higher you set LOMEM, the less room you have for actual BASIC programming.

Next, you need to set the pointer to the shape table. The low byte value of the pointer is POKEd into 16766. The high byte pointer is POKEd into address 16767. (These pointer addresses are the same for both SB 1.0 and SB 2.0.) The high byte value is the number of times that the address can be divided by 256 evenly. The low byte value is the remainder of the address minus the product of 256 and the high byte value. For 27407 the high byte value is "107"; the low byte value is "15".

Now, you can use BASIC's shape commands. You can set the color with HCOLOR. You can set the size of the basic pattern with SCALE. The syntax for SCALE is similar to HCOLOR. For instance, "SCALE = 200". The SCALE value can be a value from "0" thru "255". At zero the shape will be drawn just as you designed it; "255" is the largest size. You can determine the current SCALE value by PEEKing address 16765. SCALE works by repeating each individual vector the specified number of times. For example, if a movement is to plot and the move one pixel to the left, this would be repeated 100 times for a SCALE of 100.

- more next month -

BASIC CONVERSIONS

LOMEM and HIMEM:

LOMEM and HIMEM set the lower and upper limits of programmable memory. Each of the following addresses is the first of a low/high integer address value.

POINT	Asoft	SB1.0	SB2.0
LOMEM	105	16095	1594
HIMEM	115	16089	1588

Number of Program Lines:

With SmartBASIC another address pair contains the number of program lines currently in memory.

With SmartBASIC V1.0 use this formula:
PEEK(16092) * 256 + PEEK(16091)

With SmartBASIC V2.0 use this one:
PEEK(1591) * 256 + PEEK(1590)

BREAK and PAUSE

With SB 1.0 address 16134 contains the ASCII value that implements the BREAK function (CONTROL+C by default). Address 16135 contains the ASCII value for PRINT PAUSE (CONTROL+S by default).

With SB 2.0 address 1633 contains the BREAK ASCII value. And, with SB 2.0 address 1634 contains the ASCII value for PRINT PAUSE.

Merging Programs:

With AppleSoft BASIC, the CHAIN command merges the filename specified with the program already in RAM. With SmartBASIC 2.0, the MERGE command does this. The syntax is the same as for LOAD.

With SB 1.0, there is no pre-defined command for modular programming. You can, however, use a simple POKE trick. "POKE 6356, 201" to make the LOAD command perform as MERGE or CHAIN. "POKE 6356, 205" to restore LOAD to its normal condition.

HACKER'S DELIGHT

Z80 DATA PROCESSING

Let's continue our discussion of the frequently used Z80 AND op code. As we mentioned last month, AND conducts a bit by bit examination of the accumulator and another specified value. If either bit is "0", the result is also "0". The result of all eight comparisons is stored in the accumulator.

There are a couple of points to consider when using AND. First, the previous accumulator value will be lost. The other value specified in the bit by bit comparison is not affected.

You should also consider the changes to the Flag register. The two most commonly checked flags (Carry and Zero) are both changed. Additionally, the Parity and Sign flags are changed.

The Carry flag is reset; the resulting status is NC. If there are ANY matches (in the bit by bit comparison) with SET bits, the Zero flag is reset; the resulting status is NZ. If there are NO matches with SET bits, the Zero flag is set; the resulting status is Z. Consider this:

```
11000011 AND 00000001 = 00000001
conditions: NZ, NC


11000011 AND 00100000 = 00000000
conditions: Z, NC
```

There are eleven Z80 AND opcodes. One is for indirect addressing; the comparison is with a byte of RAM pointed to by the HL pair, in parentheses. Two are for indexed addressing. One is for absolute addressing; the value immediately following the AND opcode is used for the comparison. Note, again, that the accumulator is an implied operand in each instruction.

INDIRECT ADDRESSING
AND (HL)	$A6	166

INDEXED ADDRESSING
AND (IX+dd)	$DD A6 dd	221, 166, dd
AND (IY+dd)	$FD A6 dd	263, 166, dd

STANDARD IMPLIED ADDRESSING
AND A	$A7	167
AND B	$A0	160
AND C	$A1	161
AND D	$A2	162
AND E	$A3	163
AND H	$A4	164
AND L	$A5	165

IMMEDIATE ADDRESSING
AND nn	$E6 nn	230, nn

DriveCHECK

In our March 1987 issue (page 16) we LISTed a program to check on drive status. Since then, we've done considerably more study of DCB's. As a result, we've now got a much more accurate drive check routine. The assembly language is detailed on the next page (p. 12). A BASIC program demonstrating the routine is on page 13.

The routine checks for five different status values; this even more specific than the EOS itself. The codes and meanings are as follows:

```
0 = drive OK and occupied
1 = no such drive (no DCB for it)
2 = bad block error
3 = drive OK and empty
4 = access denied
```

The "bad block error" (returned status of "2") will be returned immediately after attempting to read from or write to a bad block (sector). The "access denied error" (returned status of "4") can be the result of either of two circumstances. The drive is currently in use (as with the start block read and write EOS routines) or it is a disk drive that is turned off.

The routine is the first draft of one of the 60-DOS routines. As is, it checks only one drive. The drive code (4, 5, 8, or 24) must first be stored at address 65531 ($FFFB). The resulting status is returned in the accumulator. Our BASIC program uses another Z80 routine to CALL the DriveCHEK routine. Line numbers 250 and 260 setup this one. It stores the accumulator value in address 65535.

DriveCHEK uses two bytes of a device's DCB. The first byte is device "return code". The last byte is the device "dependent status". The "return code" tells you whether or not the drive can be accessed. The "dependent status" lets you know the remaining error checks.

Each disk drive has its own DCB. The tape drives, however, share a DCB. The first tape drive uses the lower nibble of the "dependent status"; the second tape drive uses the upper nibble.
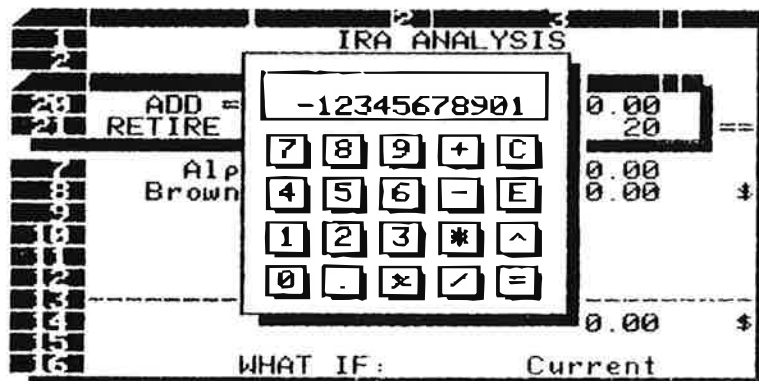
TITLE (asmb#56):

DriveCHEK

addr:	Label:	Value(s):	Op Code:	Comment:
27648	STAT01	58,251,255	LD A, (65531)	;get drive number
27651		205,126,252	CALL 64638	;get DCB return code
27654		254, 1	CP 1	;check for no DCB
27656		200	RET Z	;return if no DCB
27657		254,155	CP 155	;check for no return
27659		32, 3	JR +3	;if return, skip 3 bytes
27661		62, 4	LD A, 4	;define error code
27663		201	RET	;exit routine
27664	STAT02	58,251,255	LD A, (65531)	;get drive number
27667		205,228,252	CALL 64740	;get DCB dependent status
27670		245	PUSH AF	;store status value
27671		58,251,255	LD A, (65531)	;get drive number
27674		254, 24	CP 24	;check for tape#2
27675		32, 11	JR Z, +11	;if not, skip 11 bytes
27677	tape#2	241	POP AF	;retrieve dependent status
27679		203, 63	SRL A	;divide by 2
27681		203, 63	SRL A	;divide by 2
27683		203, 63	SRL A	;divide by 2
27685		203, 63	SRL A	;divide by 2
27687		24, 3	JR +3	;skip next 3 bytes
27689	other	241	POP AF	;retrieve dependent status
27690		230, 15	AND 15	;mask out upper nibble
27692		254, 2	CP 2	;check for bad block error
27694		200	RET Z	;if so, exit routine
27695		254, 3	CP 3	;check for drive empty
27697		200	RET Z	;if so, exit routine
27698		254, 0	CP 0	;check for OK and medium in
27700		200	RET Z	;if so, exit routine
27701		62, 1	LD A, 1	;else, set no drive code
27703		201	RET	;exit routine

```
  10 REM DriveCHEK
  20 REM simple storage drive diagnostic
  30 REM by DIGITAL EXPRESS
  40 REM presented in Nibbles & Bits
  50 REM October, 1987
 100 LOMEM :29696: POKE 16149, 255: POKE 16150, 255
 110 IF PEEK(259) <> 195 GOTO 1100
 200 DATA 58,251,255,205,126,252,254,1,200,254,155,32,3,62,4,201
 210 DATA 58,251,255,205,228,252,245,58,251,255,254,24,32,11
 220 DATA 241,203,63,203,63,203,63,203,63,24,3,241,230,15
 230 DATA 254,2,200,254,3,200,254,0,200,62,1,201
 240 FOR x = 27648 TO 27703: READ mc: POKE x, mc: NEXT
 250 DATA 205,0,108,50,255,255,201
 260 FOR x = 27704 TO 27710: READ mc: POKE x, mc: NEXT
 500 DATA analyze drives,exit DriveCHEK
 510 FOR x = 1 TO 2: READ m1$(x): NEXT
 520 DATA tape one,tape two,disk one,disk two
 530 FOR x = 1 TO 4: READ dv$(x): NEXT
 540 DATA OK/drive occupied,no such drive,bad block error
 550 DATA OK/drive empty,access denied
 560 FOR x = 0 TO 4: READ st$(x): NEXT
1000 POKE 17059, 27: POKE 17115, 27: POKE 17126, 246: TEXT
1010 VTAB 2: HTAB 11: INVERSE: PRINT " DriveCHEK ": NORMAL
1020 FOR x = 1 TO 2: VTAB x+4: HTAB 7: PRINT x; " = "; m1$(x): NEXT
1030 GET k$: k% = VAL(k$)
1040 IF k% < 1 OR k% > 2 THEN  PRINT CHR$(7); : GOTO 1030
1050 IF k% = 1 GOTO 2000
1100 TEXT: PRINT " end of program.": END
2000 POKE 17059, 23: POKE 17115, 23: TEXT
2010 PRINT " status codes:": PRINT
2020 FOR x = 0 TO 4: PRINT " "; x; "---"; st$(x): NEXT
2030 PRINT: FOR x = 1 TO 4: PRINT " "; dv$(x); ":": NEXT
2040 VTAB 20: HTAB 5: PRINT "<return> = check status"
2050 HTAB 5: PRINT "<escape> = main menu"
2060 HTAB 5: PRINT "<delete> = reset DCBs"
2070 GOSUB 2500
2080 POKE 16953, 0: VTAB 18: HTAB 1: GET go$
2100 IF go$ = CHR$(27) THEN  POKE 16953, 95: GOTO 1000
2110 IF go$ = CHR$(13) THEN  GOSUB 2500: GOTO 2080
2120 IF go$ = CHR$(151) OR go$ = CHR$(159) THEN  CALL 64605: GOTO 2080
2130 PRINT CHR$(7); : GOTO 2080
2500 POKE 65531, 8: CALL 27704: VTAB 9: HTAB 12: PRINT PEEK(65535)
2510 POKE 65531, 24: CALL 27704: VTAB 10: HTAB 12: PRINT PEEK(65535)
2520 POKE 65531, 4: CALL 27704: VTAB 11: HTAB 12: PRINT PEEK(65535)
2530 POKE 65531, 5: CALL 27704: VTAB 12: HTAB 12: PRINT PEEK(65535)
2540 RETURN
```

Printer Status

Most print routines for a second printer only check the primary status bit (bit "0") of the printer. The program LISTed on the bottom of page 16 actually checks on four possible printer conditions. And, it uses a simple error code for the result. These are as follows:

```
0 = printer not connected to ADAM
1 = connected and ready to use
2 = connected but off-line
3 = connected and power off
```

The routine just gets the value from the port (64d, $40) and resets the port value. The resulting error code is stored in address 27647. The assembly language of the routine is as follows:

```
IN    A, (64)     or   219, 64
RES   6, A        or   203,183
LD    (27647),A   or    50,255,107
RET               or   201
```

EOS GAME CONTROLLER INPUT

Last month we mentioned a couple of bugs with the EOS routine to read the game controllers. The first is in the pin value to keypad value conversion table. This table occupies addresses 57846 through 57861. The table is simply used to convert the INput pin values to the binary decimal values of the keypad.

The super game controller permits three values not directly accessible from the standard 8C keypad. These are the two lower triggers pressed individually and another value if they are pressed simultaneously. The binary values are:

```
12 = purple trigger
13 = blue trigger
14 = both at the same time
```

Also, a little - known fact is that you can achieve these three values from the standard 8C. The trick is to press two specified keys simultaneously. More explicitly:

```
12 = * and 3
13 = # and 3
14 = * and #
```

Now to fix the translation error. The first byte in the conversion table is incorrect; it is a "15". It should be a "14". To correct:

POKE 57846, 14

PACK and UNPACK

One of the shortcomings in using a ramdisk to store your favorite utilities is the involved setup procedure each time you bootup the system. You have to transfer the programs to the ramdisk one at a time.

A better procedure is to have all your favorite utilities PACKed into one large file that can be stored on a physical disk (or data pack). Then, when you boot the system thereafter, just transfer that ONE (very large) file to the ramdisk.

PACK and UNPACK accomplish this time - saveing task for you. PACK is LISTed on pages 15 and 16. UNPACK is LISTed on page 17.

PACK includes fairly detailed usage instructions. Just store all your favorite programs on the ramdisk. Then RUN PACK. It will 'pack' them all into one large file (called 'nut") for storage on disk or data pack. You will most likely want to store UNPACK on the same disk as 'nut'. Now anytime after this initial setup, just RUN UNPACK and the files will be 'unpacked' back into their individual components on the ramdisk.

It works with TurboDISK 1.0, MegaDISK 1.0, and the Walters Software ramdisks. Try it. You'll wonder how you ever got along without it!

```
  10 REM PACKer
  20 REM This program is a public domain contribution
  30 REM by DIGITAL EXPRESS.
  40 REM October 1987
 100 LOMEM :30000: POKE 16149, 255: POKE 16150, 255
 110 DATA 62,26,17,208,107,33,160,253,205,204,252,50,255,107,201
 120 FOR x = 27648 TO 27662: READ mc: POKE x, mc: NEXT
 130 k$ = "BLOCKS LEFT"+CHR$(3): FOR x = 1 TO LEN(k$)
 140 POKE 27599+x, ASC(MID$(k$, x, 1)): NEXT
 150 FOR x = 0 TO 3: POKE 61408+x, 0: NEXT
 160 CALL 27648: er = PEEK(27647): tb = PEEK(64942)*256+PEEK(64941)
 170 POKE 61408, 203: POKE 61409, 70: POKE 61410, 32: POKE 61411, 72
 180 IF er = 0 GOTO 200
 190 TEXT: PRINT " RAMDISK DIRECTORY ERROR!!": END
 200 k$ = "nut"+CHR$(2)+CHR$(3): FOR x = 1 TO LEN(k$)
 210 POKE 27599+x, ASC(MID$(k$, x, 1)): NEXT
 220 DATA 62,0,17,208,107,33,160,253,205,207,252,50,255,107,201
 230 FOR x = 27663 TO 27677: READ mc: POKE x, mc: NEXT
 240 DATA 62,0,33,208,107,17,000,0,1,000,0,205,201,252,50,255,107,201
 250 FOR x = 27678 TO 27695: READ mc: POKE x, mc: NEXT
 260 DATA 62,26,1,0,0,17,000,000,33,0,112,205,243,252,50,255,107,201
 270 FOR x = 27696 TO 27713: READ mc: POKE x, mc: NEXT
 280 DATA 62,0,1,0,0,17,000,000,33,0,112,205,246,252,50,255,107,201
 290 FOR x = 27714 TO 27731: READ mc: POKE x, mc: NEXT
1000 TEXT: PRINT " This program will compact all"
1010 PRINT " the files on your ramdisk into";
1020 PRINT " a single 'PACKed' file.  You"
1030 PRINT " unpack (restore them to the"
1040 PRINT " ramdisk) them by entering"
1050 PRINT " RUN UNPACK."
1060 VTAB 12: PRINT " Select the drive to store the"
1070 PRINT " 'PACKed' file on (the file"
1080 PRINT " will be named 'nut'):"
1090 PRINT: PRINT " 1 = tape one": PRINT " 2 = disk one"
1100 GET k$: k% = VAL(k$)
1110 IF k% < 1 OR k% > 2 GOTO 1200
1120 dr% = 8/k%: GOTO 2000
1200 TEXT: PRINT " end of program.": END
2000 HOME: PRINT " creating PACKed file ..."
2010 bc% = tb/64: de% = tb-bc%*64: de% = (de%-1)*4
2020 IF de% < 0 THEN  de% = 0
2030 POKE 27679, dr%: POKE 27687, bc%: POKE 27685, de%: CALL 27678
2040 er = PEEK(27647): IF er = 0 GOTO 3000
2100 HOME: PRINT " CAN NOT CREATE ON DESTINATION!"
2110 IF er = 22 THEN  PRINT " missing media!!": END
2120 IF er = 24 THEN  PRINT " not an EOS directory!!": END
2130 IF er = 5 THEN  PRINT " 'nut' file already exists!!": END
2140 IF er = 13 THEN  PRINT " not enough storage space!!": END
2150 PRINT " file access error!!": END
3000 HOME: PRINT " transferring data ..."
3010 POKE 27649, dr%: CALL 27648
3020 IF PEEK(27647) <> 0 THEN  HOME: GOTO 2150
3030 ds = PEEK(64942)*256+PEEK(64941)
3040 POKE 64940, 146: POKE 64948, tb/256
3050 POKE 64947, tb-PEEK(64948)*256
3060 POKE 64950, 4
3100 POKE 27664, dr%: CALL 27663
3110 IF PEEK(27647) <> 0 THEN  HOME: GOTO 2150
```

" PACK" LIST continued ...

```
4000 POKE 27715, dr%: FOR x = 0 TO tb-1
4010 va = x: GOSUB 5000: POKE 27702, lo%: POKE 27703, hi%: CALL 27696
4020 IF PEEK(27647) <> 128 GOTO 6000
4030 va = ds+x: GOSUB 5000
4040 POKE 27720, lo%: POKE 27721, hi%: CALL 27714
4050 IF PEEK(27647) <> 0 GOTO 7000
4060 NEXT x
4100 HOME: PRINT " PACKing successful ...": END
5000 hi% = va/256: lo% = va-256*hi%: RETURN
6000 HOME: PRINT " READ ERROR ON THE RAMDISK!!"
6010 PRINT " BLOCK: "; PEEK(27703)*256+PEEK(27702): END
7000 HOME: PRINT " WRITE ERROR ON DESTINATION!!"
7010 PRINT " BLOCK: "; PEEK(27721)*256+PEEK(27720): END
```



```
10 REM printer status check demo
20 REM written by DIGITAL EXPRESS
30 REM presented in Nibbles & Bits
40 REM October, 1987
100 LOMEM :28000
110 DATA 219,64,203,183,50,255,107,201
120 FOR x = 27600 TO 27607: READ mc: POKE x, mc: NEXT
200 TEXT: PRINT " second printer status:"
210 INVERSE: CALL 27600: st = PEEK(27647): VTAB 3: HTAB 2
220 IF st = 0 THEN  PRINT " not connected"
230 IF st = 1 THEN  PRINT " ready to use"
240 IF st = 2 THEN  PRINT " connected / off-line"
250 IF st = 3 THEN  PRINT " connected / turned off"
260 NORMAL
300 VTAB 18: PRINT " 1 = check again"
310 PRINT " 2 = exit program"
320 GET k$: k% = VAL(k$): IF k% = 1 GOTO 210
330 TEXT: PRINT " end of program."
340 PRINT " enter NEW before programming.": END
```

```
  10 REM UNPACKer
  20 REM This program is a public domain contribution
  30 REM by DIGITAL EXPRESS.
  40 REM October 1987
 100 LOMEM :30000: POKE 16149, 255: POKE 16150, 255
 110 k$ = "nut"+CHR$(2)+CHR$(3): FOR x = 1 TO LEN(k$)
 120 POKE 27599+x, ASC(MID$(k$, x, 1)): NEXT
 130 DATA 62,4,17,208,107,33,160,253,205,204,252,50,255,107,201
 140 FOR x = 27648 TO 27662: READ mc: POKE x, mc: NEXT
 150 DATA 62,0,1,0,0,17,000,000,33,0,112,205,243,252,50,255,107,201
 160 FOR x = 27696 TO 27713: READ mc: POKE x, mc: NEXT
 170 DATA 62,26,1,0,0,17,000,000,33,0,112,205,246,252,50,255,107,201
 180 FOR x = 27714 TO 27731: READ mc: POKE x, mc: NEXT
1000 TEXT: PRINT " UNPACKer": PRINT: PRINT
1010 PRINT " Which drive contains 'nut'?"
1020 PRINT: PRINT " 1 = tape one": PRINT " 2 = disk one"
1030 GET k$: k% = VAL(k$)
1040 IF k% < 1 OR k% > 2 GOTO 1100
1050 dr% = 8/k%: GOTO 2000
1100 TEXT: PRINT " end of program.": END
2000 POKE 27649, dr%: CALL 27648
2010 er = PEEK(27647): ON er = 0 GOTO 3000: HOME
2020 IF er = 5 THEN  PRINT " FILE NOT FOUND!!": END
2030 PRINT " I/O ERROR!!": END
3000 sb = PEEK(64942)*256+PEEK(64941)
3010 nb = PEEK(64948)*256+PEEK(64947)
3500 HOME: PRINT " UNPACKing 'nut' ..."
4000 POKE 27697, dr%: FOR x = 0 TO nb-1
4010 va = x+sb: GOSUB 5000: POKE 27702, lo%
4015 POKE 27703, hi%: CALL 27696
4020 IF PEEK(27647) <> 128 GOTO 6000
4030 va = x: GOSUB 5000
4040 POKE 27720, lo%: POKE 27721, hi%: CALL 27714
4050 IF PEEK(27647) <> 0 GOTO 7000
4060 NEXT x
4100 HOME: PRINT " UNPACKing successful ...": END
5000 hi% = va/256: lo% = va-256*hi%: RETURN
6000 HOME: PRINT " READ ERROR ON THE SOURCE!!"
6010 PRINT " BLOCK: "; PEEK(27703)*256+PEEK(27702): END
7000 HOME: PRINT " WRITE ERROR ON THE RAMDISK!!"
7010 PRINT " BLOCK: "; PEEK(27721)*256+PEEK(27720): END
```
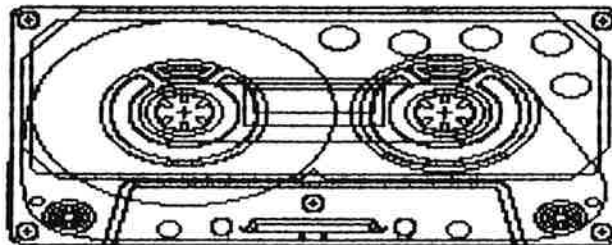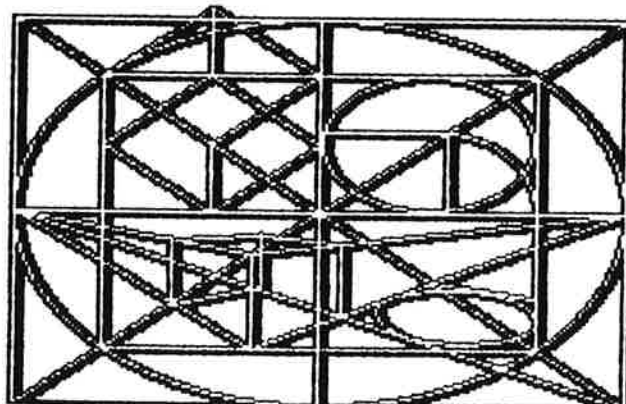
ADAM:
SIGHT & SOUND

VIDEO REGISTERS

(part 2)

As we discussed last month, the video chip has nine control registers, four are screen controls and the remaining five are table pointers. Since a register can hold no value larger than 255 ($FF) and VRAM is 16K, these pointer values are offset by pre-defined multiplicative factors. To further complicate matters, the EOS erroneously names the two sprite tables as "0" and "1". The registers are as follows:

```
0 = primary graphics mode
1 = video display selection

2 = pattern control table pointer (x 1024)
3 = bit image table pointer (x 64)
4 = color control table pointer (x 2048)
5 = sprite control table pointer (x 128)
6 = sprite bit image table pointer (x 2048)

7 = border background color
8 = status register (read only)
```

You can access the video registers with your own Z80 port routines. But due to the math involved with the offsets and the complexities of writing to VRAM (switching between the VDP control port and the VDP data port), the EOS includes routines for quick access.

The 81-st vector in the jump table (64800 or $FD20) allows you to send a value to a VDP register. Load "B" with the register number, "C" with the value to be sent, and then CALL the routine. This routine is useful for setting up registers "0", "1", and "7".

The 82-nd vector in the jump table (64803 or $FD23) is for reading register eight. Bit "7" is the interrupt flag. Bit "6" is a horizontal plane status check. The number of the fifth sprite is put into the lower five bits. Bit "5" is a sprite collision status. Reading this register clears all the flags to zero and restarts the NMI interrupt.

- more next month -

BOOTPIC DELUXE

In the August and September issues we LISTed the programs used to create the SmartBASIC graphic screen bootup for "ezFILER". In recent weeks we've received scores of letters requesting a more generalized program to setup a nice graphic screen while BASIC loads into memory. "BootPic Deluxe" is our solution. It is LISTed on the next three pages (19, 20, and 21).

Just RUN the program with your graphics already on the screen. It works with a GR, HGR, or HGR2 screen. You can already have files on the medium, but the bootup will be a lot faster on data pack if the graphics file is the first program on a freshly INITed data pack. You can already have SmartBASIC on the medium (as with a standard backup), or you can transfer BASIC to the medium later with our "EZfileXFER" program. The picture file will be named "BootPic". The program both stores the picture file and writes the new bootstrap routine to block zero.

Line numbers 10 thru 750 setup for the rest of the program initializing variables and POKEing machine code routines into RAM. One of the key elements in the program's control is address 17008. This address is used to store the current graphics mode by SmartBASIC (0=TEXT, 1=GR, 2=HGR, and 3=HGR2).

The various z80 / EOS file handling routines have been examined in previous issues. Line numbers 400 thru 670 constitute the new BASIC bootstrap routine. This is annotated with REMark statements. Line numbers 400 thru 490 setup VRAM for the graphics mode. Line numbers 560 and 570 transfer the bit image and color data to VRAM revealing the picture EXACTLY as it was stored by the program.

When you RUN the program it will save your screen in a RAM buffer and then switch to TEXT mode for instructions and the menu of actions. You can view the screen, change the background color (will change it immediately and on the bootstrap routine), clear the SmartPAINT title bar (in the event that you are using one of the many PD hi-res files), and transfer all the data to the destination medium.

If you work with BASIC a lot (as many of us do), you'll no doubt find this to be a very impressive addition to your SmartBASIC disks or data packs. Disk drive users will probably enjoy it more due to the slower loading of data packs.

```
  10 REM "BootPic Deluxe"
  20 REM written by DIGITAL EXPRESS
  30 REM presented in Nibbles & Bits
  40 REM October 1987
  50 REM if you exit the program, you can recover your graphics
  51 REM screen by entering the graphic command (GR, HGR, or HGR2)
  52 REM and then entering gosub 10600.
  53 REM For example, "HGR2:GOSUB 10600:GET k$:RUN"
 100 IF PEEK(259) <> 195 GOTO 10100
 110 LOMEM :45000: POKE 16149, 255: POKE 16150, 255: im = PEEK(17008)
 115 GOSUB 10400: FOR x = 108*256 TO 112*256-1: POKE x, 0: NEXT
 120 DATA 33,0,116,17,0,48,6,0,112,35,27,122,179,32,249,201
 130 FOR x = 27600 TO 27615: READ mc: POKE x, mc: NEXT
 140 DATA 1,0,0,17,0,0,33,0,116,205,0,253,201
 150 FOR x = 65520 TO 65532: READ mc: POKE x, mc: NEXT
 160 DATA view graphics screen,set background color
 170 DATA clear SmartPAINT title bar,begin storage,exit program
 180 FOR x = 1 TO 5: READ m1$(x): NEXT
 190 DATA 175,17,16,0,33,0,0,205,38,253,201
 200 FOR x = 27620 TO 27630: READ mc: POKE x, mc: NEXT
 210 DATA tape one,disk one
 220 FOR x = 1 TO 2: READ dr$(x): NEXT
 230 k$ = "BootPic"+CHR$(2)+CHR$(3)
 240 FOR x = 1 TO LEN(k$): POKE x+27634, ASC(MID$(k$, x, 1)): NEXT
 250 FOR x = 1 TO LEN(k$): POKE x+28415, ASC(MID$(k$, x, 1)): NEXT
 260 j$ = "BASICPGM"+CHR$(2)+CHR$(3)
 270 FOR x = 1 TO LEN(j$): POKE x+28425, ASC(MID$(j$, x, 1)): NEXT
 280 cv% = PEEK(25431): IF im = 1 THEN  cv% = PEEK(18607)
 300 DATA 62,4,33,243,107,17,0,44,1,0,0,205,201,252,50,255,107,201
 310 FOR x = 28672 TO 28689: READ mc: POKE x, mc: NEXT
 320 DATA 62,4,17,243,107,33,160,253,205,207,252,50,255,107,201
 330 FOR x = 28690 TO 28704: READ mc: POKE x, mc: NEXT
 340 DATA 62,4,1,0,0,17,0,0,33,0,116,205,246,252,50,255,107,201
 350 FOR x = 28705 TO 28722: READ mc: POKE x, mc: NEXT
 400 REM bootstrap routine (VRAM setup)
 410 DATA 1,128,1,205,32,253
 420 DATA 1,2,0,205,32,253
 430 DATA 33,0,0,62,4,205,41,253
 440 DATA 33,0,32,62,3,205,41,253
 450 DATA 33,0,24,62,2,205,41,253
 460 DATA 6,3,33,0,24,175,197,245,229,17,1,0,205,38,253
 470 DATA 225,241,35,60,32,242,193,16,237
 480 DATA 1,15,7,205,32,253
 490 DATA 1,192,1,205,32,253
 500 REM (load picture file)
 510 DATA 58,111,253,17,0,203,33,160,253,205,204,252,194,231,252
 520 DATA 237,91,173,253,33,0,116,6,12
 530 DATA 197,58,111,253,1,0,0,213,229,205,243,252,225,209
 540 DATA 194,231,252,1,0,4,9,19,193,16,231
 550 REM (show picture)
 560 DATA 33,0,116,17,0,0,1,0,24,205,26,253
 570 DATA 33,0,140,17,0,32,1,0,24,205,26,253
 580 REM (play sound effect)
 590 DATA 6,30,62,128,211,224,120,211,224,62,146,211,224
```
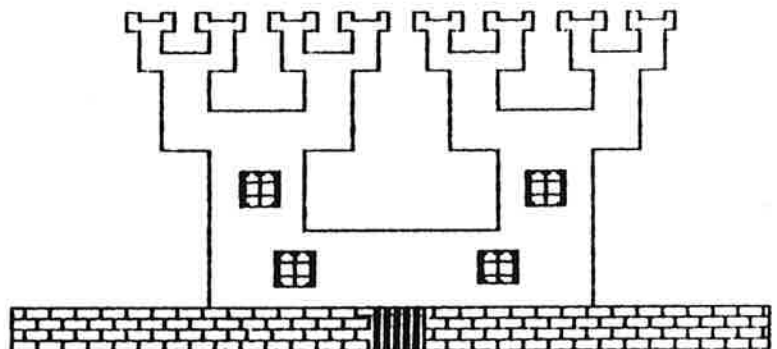
AROUND
the CORNER

'BootPic Deluxe' LIST continued ...

```
 600 DATA 17,0,15,27,122,179,32,251,5,16,234,62,159,211,224
 610 REM (boot SmartBASIC V1.0)
 620 DATA 58,111,253,6,1,33,10,203,205,192,252,194,231,252
 630 DATA 1,0,112,33,0,1,205,210,252,194,231,252,62,1,205,195,252
 640 REM (correct default drive)
 650 DATA 58,111,253,50,1,65
 660 REM (begin BASIC)
 670 DATA 195,0,1
 680 DATA -1
 700 st = 27648: tt = 0
 710 READ mc: IF mc = -1 GOTO 730
 720 POKE st, mc: st = st+1: tt = tt+mc: GOTO 710
 730 IF st = 27861 AND tt = 23317 GOTO 1000
 740 TEXT: PRINT "data entry error!!!"
 750 PRINT "check your data values": END
1000 IF im <> 0 THEN  GOSUB 10500
1010 TEXT: PRINT " This program creates a self-"
1020 PRINT " booting graphics screen (GR,"
1030 PRINT " HGR, or HGR2) on your Smart-"
1040 PRINT " BASIC V1.0 backup.   Your"
1050 PRINT " picture should already be on"
1060 PRINT " screen when you first RUN this";
1070 PRINT " program.  Selecting option #"
1080 PRINT " 2 from the menu will write"
1090 PRINT " that screen to the disk as"
1100 PRINT " a file.  And, it will write"
1110 PRINT " a new bootstrap (block 0)"
1120 PRINT " routine for SmartBASIC.": PRINT: PRINT
1130 PRINT " You may use any size directory";
1140 PRINT " and you may already have"
1150 PRINT " files on the medium.  You can"
1160 PRINT " use EZfileXFER (Sept 1986"
1170 PRINT " issue) to transfer BASIC to"
1180 PRINT " the medium later.  And, BASIC"
1190 PRINT " will boot from ANY drive with"
1200 PRINT " that drive as the default.": PRINT: GOSUB 10300
1500 TEXT: FOR x = 1 TO 5: PRINT " "; x; "="; m1$(x): NEXT
1510 GET k$: k% = VAL(k$): IF k% < 1 OR k% > 5 GOTO 1510
1520 ON k% GOTO 2000, 3000, 4000, 5000, 10100
2000 HOME: PRINT " press any key to view the"
2010 PRINT " graphics screen.  Then press"
2020 PRINT " any key again for the menu.": GET go$
2030 IF im <> 0 GOTO 2100
2040 HOME: PRINT " no screen to view ...": GOTO 2200
2100 IF im = 1 THEN  GR
2110 IF im >= 2 THEN  HGR2
2120 GOSUB 10600
2200 GET go$: GOTO 1500
```
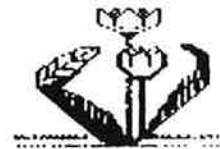
'BootPic Deluxe' LIST continued ...

```
3000 HOME: INPUT " Enter color value (1-15): "; cv$
3010 cv% = VAL(cv$): IF cv% < 1 OR cv% > 15 GOTO 3000
3020 IF im = 1 THEN  POKE 18607, cv%
3030 IF im = 2 OR im = 3 THEN  POKE 25431, cv%
3040 GOTO 2000
4000 IF im < 2 GOTO 1500
4010 HGR2: GOSUB 10600
4020 GOSUB 10600
4100 FOR x = 0 TO 23: POKE 27626, x: CALL 27620
4110 POKE 27626, x+32: CALL 27620: NEXT: GOSUB 10500: GOTO 1500
5000 GOSUB 10200: dv% = 8/dr%: GOSUB 10400
5010 POKE 28673, dv%: CALL 28672: IF PEEK(27647) = 0 GOTO 5100
5020 er% = PEEK(27647): HOME: HTAB 2
5030 IF er% = 22 THEN  PRINT "I/0 error!": GOTO 5090
5040 IF er% = 24 THEN  PRINT "not EOS directory!": GOTO 5090
5050 IF er% = 6 THEN  PRINT "filename already exists!": GOTO 5090
5060 IF er% = 13 THEN  PRINT "no more room!": GOTO 5090
5070 PRINT "file access error!"
5090 PRINT: PRINT: GOSUB 10300: GOTO 1500
5100 POKE 28691, dv%: POKE 28699, 204: CALL 28690
5110 POKE 64940, 146: POKE 64947, 12: POKE 64948, 0
5120 POKE 64949, 0: POKE 64950, 4
5130 POKE 28699, 207: CALL 28690
5140 sb = PEEK(64942)*256+PEEK(64941)
5150 IF PEEK(27647) = 0 GOTO 6000
5160 HOME: HTAB 2: GOTO 5070
6000 POKE 28706, dv%: FOR x = 0 TO 11: POKE 28711, x+sb
6010 POKE 28715, x*4+116: CALL 28705
6020 IF PEEK(27647) = 0 GOTO 6040
6030 HOME: HTAB 2: PRINT "block write error on: "; x+sb: GOTO 5090
6040 NEXT x
6100 POKE 27709, cv%: POKE 28711, 0: POKE 28715, 108: CALL 28705
6110 IF PEEK(27647) <> 0 GOTO 6030
6120 HOME: HTAB 2: PRINT "procedure successful ...": GOTO 5090
10000 POKE 16953, 223: IF PEEK(17008) = 0 THEN  POKE 16953, 95
10010 END
10100 HOME: POKE 16953, 223: IF PEEK(17008) = 0 THEN  POKE 16953, 95
10110 PRINT "program terminated!": END
10200 HOME: PRINT " Which drive?"
10210 FOR x = 1 TO 2: PRINT " "; x; " = "; dr$(x): NEXT
10220 GET dr$: dr% = VAL(dr$): IF dr% < 1 OR dr% > 2 GOTO 10220
10240 HOME: PRINT " insert "; LEFT$(dr$(dr%), 4); " in the drive,"
10300 PRINT " press any key to continue ...";
10310 GET go$: PRINT: RETURN
10400 HOME: PRINT " one moment please ...": RETURN
10499 REM read graphics routine
10500 GOSUB 10700: POKE 65522, np: POKE 65530, 29: POKE 65525, 0
10510 CALL 65520: POKE 65525, 32: POKE 65528, 140: CALL 65520
10520 POKE 65528, 116: RETURN
10599 REM recover graphics routine
10600 POKE 65522, 24: POKE 65530, 26: POKE 65525, 0: CALL 65520
10610 POKE 65525, 32: POKE 65528, 140: CALL 65520
10620 POKE 65528, 116: RETURN
10700 np = 20: IF im = 3 THEN  np = 24
10710 CALL 27600: RETURN
```

```
PRODUCT:                                  BACKUP+ 3.0
MANUFACTURER:                             MMSG Software
MEDIA TYPE:                               DDP / disk
GRAPHICS/SOUND/DESIGN:                    99;00;99
INSTRUCTIONS:                                      98
USEFULNESS vs. PRICE:                              98
RECOMMENDATION:                           highly recommended
PRICE:                                        $19.95
RATED BY:                                 Lewis R. Clancy
```

MMSG has done an outstanding job in a very pretty, and easy to use, comprehensive media manager. The instructions are very simple on menu. Each tape or disk has two copies of the program and if one fails to load the second one will load automatically. There are six categorized submenus.

BACKUP UTILITIES
COPY UTILITIES
FILE UTILITIES
CATALOG
INITIALIZE MEDIA
BLOCK UTILITIES

BACKUP+ uses a RAM test, checks for critical (fatal) errors, and will use a 40K buffer. If the 64K card is installed it will use a 102K buffer. MMSG limited the use of graphics to permit maximum use of memory in the copy buffer, thus reducing the number of times media needs to be swapped.

BACKUP+ permits the copying of Supergame tapes and is INIT protected. This product permits an identical image copy of data and permits copy by file or by block. This has provisions to DELETE or RESTORE files and to check for block status indicating Bad, Used or Empty blocks. There are some other utility programs that permit block changes, but I feel that for the money and for the average ADAM owner, this program is the easiest to use without getting into trouble.

```
PRODUCT:                                  CALCPAT
MANUFACTURER:                             Tom Clary
MEDIA TYPE:                               DDP / disk
GRAPHICS/SOUND/DESIGN:                    n/a
INSTRUCTIONS:                                      95
USEFULNESS vs. PRICE:                              95
RECOMMENDATION:                           highly recommended
PRICE:                                         $9.95
RATED BY:                                 N&B staff
```

CALCPAT is a BASIC program that patches your ADAMcalc disk or data pack for use with a dot matrix printer. This has been a long-awaited feature for many ADAMcalc users.

Load your own SmartBASIC and run CALCPAT. It will instruct you to select a drive and then insert the ADAMcalc medium. It will then verify the program and write a new print routine to the actual disk or data pack. Thereafter, you can use your fast dot matrix for printing your spreadsheets.

A few notes. Only use CALCPAT on a backup of your ADAMcalc program. Mr. Clary has also patched ADAMlink II for use with a parallel interfaced printer. This one is also $9.95 and comes with ADAMlink II already patched for you. Both of these programs are distributed by ORPHANWARE and marketed by other ADAM suppliers.

If you do have a Centronics parallel interfaced second printer (PIA2, SP-1, or SP-1P interface), you will find these patches indispensable.

PRODUCT:	Beginning With The ADAM Computer
MANUFACTURER:	Terry Fowler
MEDIA TYPE:	VHS video cassette
GRAPHICS/SOUND/DESIGN:	94/94/94
INSTRUCTIONS:	94
USEFULNESS vs. PRICE:	94
RECOMMENDATION:	recommended
PRICE:	$14.95
RATED BY:	N&B staff

"Beginning With The ADAM Computer" is a software demonstration video cassette. It is designed primarily for the new ADAM owner for a well-rounded, yet fairly quick, look at some of the more popular software available for ADAM.

The tape was recorded from a monitor as the programs ran. Instructions are typed on the screen as you go along. Also to aid in following the tape, a hardcopy is provided. In BASIC, "ezkeysII" by DIGITAL EXPRESS is used to provide sound while the comments are being typed on screen.

Many titles are examined, both Coleco (commercial and public domain) and third party. With SmartWriter the viewer is shown several aspects of the program including how to verify your revision number. Other Coleco titles include: SmartBASIC, CP/M 2.2, SmartFILER, ADAMcalc, SmartLOGO, ADAMlink, Disk Manager, Zaxxon, Dragon's Lair, Super SubRoc, 2010, Jeopardy, and Troll's Tale.

Software by MMSG examined are BACKUP+ 3.0 and EASY COME, EASY GO. PACKCOPY by Unreal Software is viewed. GRAPHIXPAINTER by NIAD is viewed. PAINTMASTER by Strategic Software is viewed. And DIGITAL EXPRESS titles include: ShowOFF I, ShowOFF II, TurboDISK 1.0, and Intel-LOAD V1.0. And, Mr. Fowler's FILE PRINTER is viewed.

Although it is difficult to thoroughly cover a variety of software on one standard cassette, Mr. Fowler has done a good job with this video tape. It should be the ideal gift for a new ADAM owner.

PRODUCT:	DS disk drive upgrade
MANUFACTURER:	ORPHANWARE
MEDIA TYPE:	n/a
GRAPHICS/SOUND/DESIGN:	n/a
INSTRUCTIONS:	n/a
USEFULNESS vs. PRICE:	95
RECOMMENDATION:	highly recommended
PRICE:	$125.00
RATED BY:	N&B staff

ORPHANWARE is offering a double - sided disk drive upgrade to the standard Coleco disk 160K disk drive. They have a couple of brand name options for the new head assembly. You can get one for less than $125, but at $125 you get the the Fujitsu assembly which is very quiet!

With the returned disk drive you also get a disk for formatting both sides of a double sided disks in the drive. You have a couple of format options. You can format single or double sided, and you can format two drives simultaneously. You can also verify the formatted blocks. With the simultaneous format option, the process is remarkably fast. Also included is a CP/M formatting program with the same options.

The standard Coleco disk drive is much faster and more reliable than the tape drives. However, a major drawback to using disk drives has been the limited storage capacity. This ORPHANWARE upgrade turns your disk drive into 320K unit which allows you to use both sides of DS 5.25" disks. Once you've used the DS disk drive, you'll wonder how you ever got along without it. HIGHLY RECOMMENDED. Note: when shipping your disk drive to ORPHANWARE, be sure to pad the drive very securely so as to prevent damage in transit

ADAM USERS' GROUPS

FLORIDA

AUG #305
John R. Busby, II
6634 SW 41st Street
Davie, FL 33314

Metro Orlando AUG
Patricia J. Herrington
1003 Oak Lane
Apopka, FL 32703

ADAM Hackers User's Group
George Boyer
35145 Makenzie Street
Zephyrhills, FL 34246

Playground Area AUG
Howard Pines
812 Pinedale Road
Ft. Walton Beach, FL 32548

GEORGIA

ADAM Support Group
John Moore
1970 Fisher Trail NE
Atlanta, GA 30345

Dwight Waggener
4194 Meadow Court
Marietta, GA 30066

HAWAII

Marc Acosta
1534 Hoonipo Street
Pearl City, HI 96782

Hawaii AUG
2335C Apollo Avenue
Honolulu, HI 96818

ILLINOIS

Donald R. Lager
5415 North 2nd Street
Rockford, IL 61111

Bob Lennes
14637 Atlantic
Dolton, IL 60419

NIAD
Lyle Marschand
P.O. Box 1317
Lisle, IL 60532

BULLETIN BOARD

Hacker's Helper (vol I)
Mel Ostler
1641 Raasaf Boulevard
Las Cruces, NM 88005

New newsletter: ADAM'S ALIVE
E & T SOFTWARE
1010 Westminster
Garland, TX 75040

Walters Software Company
Route 4, Box 289-A
Titusville, PA 16354

ADAM disk drives
D.L. DECKER ENTERPRISES
Route 2, Box 15
Spring Mills, PA 16875-9720

In House Service Reps
Don Pearlman
620 Harmon Cove Towers
Secaucus, NJ 07094

ADAMagic
1634 North Thompson Drive
Bay Shore, NY 11706

Panasonic 1080i under $150 (plus shipping)
FOCUS Computer Center
1303 46th Street
Brooklyn, NY 11219
(toll free) 1-800-223-3411
(in NY) 718-871-7600

greater Houston Area AUG
Ten newsletters, Two Media - $15
Free Newsletter with 39 cent SASE
Route 2, Box 2756
Pearland, TX 77581

- assorted used software for sale -
send SASE for current list
Lee Smith
P.O. Box 159
Terre Hill, PA 17581

ADAM software
John Bonavita
P.O. Box 320
St. Bonaventure, NY 14778

- over 120 public domain disks -
send SASE for current list
Barry Wilson
1566 Wood Lake Drive
Chesterfield, MO 63017

PROGRAMMING UTILITY SOFTWARE

☐☐☐ Intel-BEST 3.3   (by DIGITAL EXPRESS) $24.95 (retail) $18.95 (SDP)
* makes over 3 dozen changes to BASIC 1.0; comes with 9 very user friendly MUSIC commands

☐☐☐ Intel-LOAD V1.0   (by DIGITAL EXPRESS) $15.95 (retail) $11.95 (SDP)
* converts BASIC 1.0 programs to load up to 12 times faster; stays in RAM; 2 BSAVE options

☐☐☐ Intel-LOAD V2.0   (by DIGITAL EXPRESS) $15.95 (retail) $11.95 (SDP)
* converts BASIC 2.0 programs to load up to 12 times faster; stays in RAM; 2 BSAVE options; works only in STDMEM

☐☐☐ SmartBEST V1.0   (by DATA DOCTOR) $16.95 (retail) $14.95 (SDP)
* makes several changes to BASIC 1.0; not compatible with Intel-BEST 3.3

☐☐☐ SmartTRIX   (by DATA DOCTOR) $29.95 (retail) $14.95 (SDP)
* a set of 10 excellent programming aids; two very nice sprite programs; 60 page manual; disk & DDP versions not
compatible

☐☐☐ BASICaide (rev 2)   (by Mr. T. SOFTWARE) $11.95 (retail) $9.95 (SDP)
* several BASIC 1.0 enhancements; new CHAIN command; new BIN command to store fast loading programs; macros;
fixes; more

☐☐☐ TurboDISK 1.0   (by DIGITAL EXPRESS) $24.95 (retail) $19.95 (SDP)
* creates ramdisk ability with BASIC 1.0; corrects several BASIC bugs; includes TurboCOPY -- very nice media
control and copy utility; requires 64K expander

☐☐☐ FontPOWER   (by DIGITAL EXPRESS) $16.95 (retail) $12.95 (SDP)
* utility using Coleco-like graphics for designing your own font sets; comes with 8 font sets including
"script", "Roman", "cory", and "bold"; shows you how to use the font sets in high or low resolution graphics;
plus three font shape tables for HGR and HGR2 modes; includes demos

☐☐☐ SpritePOWER   (by DIGITAL EXPRESS) $19.95 (retail) $14.95 (SDP)
* utility using Coleco-like graphics for designing your own sprites; includes 3 sets of sprites; extensive
instruction manual; shows you how to use sprites in BASIC 1.0, BASIC 2.0, and Z80 programs; includes PUFF;
includes 11K ramdisk (does NOT require 64K expander); totally Z80 program (36K)

☐☐☐ MegaUtil   (by MARATHON COMPUTER) $32.95 (retail) $27.95 (SDP)
* an excellent collection of varied programming aids; includes ByteWriter (block editor), CopyWriter (media
backup utility), PD modules, programming tips, plus more

☐☐☐ TurboDISK 2.0   (by DIGITAL EXPRESS) $15.95 (retail) $11.95 (SDP)
creates a powerful ramdisk ability for BASIC 2.0 and a 64K expander; disables EXTMEM command

☐☐☐ MegaDISK 1.0   (by DIGITAL EXPRESS) $24.95 (retail) $19.95 (SDP)
* creates the ramdisk ability for BASIC 1.0 or your own Z80 programs; works with 64K, 128K, 256K, 512K, and 1M
ORPHANWARE memory expanders; automatically checks size of your XRAM card; does NOT disable NMI interrupt
(FLASH, etc.); comes with 5 PD programs including EZfileXFER; much, much faster than a Coleco disk drive

☐☐☐ XRAMpak I   (by DIGITAL EXPRESS) $19.95 (retail) $14.95 (SDP)
* the perfect companion for MegaDISK 1.0 and your ORPHANWARE memory expansion board (any size); includes
XRboot (boot BASIC 1.0, ADAMcalc, and ADAMlink in about 2 seconds), XRcopy (a VERY powerful copy utility uses
ramdisk space ABOVE your files stored there -- great for multiple copies of PD software), PACK and UNPACK
(compacts and decompacts your favorite utilities into/from one large file for quick system setup),
EZfileXFER2 (faster than EZfileXFER)

WORD PROCESSING ENHANCEMENTS

☐☐☐ FILE PRINTER   (by Terry Fowler) $9.95 (retail) $9.45 (SDP)
* a fine set of BASIC utilities for use with your dot matrix printer; prints SmartWriter compatible files;
allows you to set default printer functions; (price goes UP at the end of November)

☐☐☐ ShowOFF II   (by DIGITAL EXPRESS) $19.95 (retail) $14.95 (SDP)
* machine code print enhancements for SmartWriter (adds 32 print controls and 5 CONTROL functions to
SmartWriter) and SmartBASIC; requires Centronics parallel interface, a Panasonic KXP-1080 or 1080i printer,
and at least a 64K expander

☐☐☐ ShowOFF IIa   (by DIGITAL EXPRESS) $19.95 (retail) $14.95 (SDP)
* very similar to ShowOFF II except that it is compatible with any dot matrix printer that supports Epson FX
escape codes; works with Epson, Star, and Panasonic line of printers and the Okimate 20; does NOT include line
justification commands or internal document margin control

RECREATION/GAMES SOFTWARE

☐☐☐ MageQuest (rev 2)   (by REEDY SOFTWARE) $16.95 (retail) $14.95 (SDP)
* superb graphic adventure; includes 9 levels of play in the main adventure plus 3 solo adventures; additional
solo adventures available from REEDY SOFTWARE

☐☐☐ TriviaPac I   (by Mr. T. SOFTWARE) $17.95 (retail) $14.95 (SDP)
* 1200 questions; 6 categories; one to four players; graphics and sound; hall of fame; many hours of fun; DDP
version ONLY

☐☐☐ Kid's TriviaPac   (by Mr. T. SOFTWARE) $17.95 (retail) $14.95 (SDP)
* 1080 questions; 6 categories; one to four players; graphics and sound; hall of fame; many hours of fun; DDP
version ONLY

☐☐☐ Strategy Strain   (by DATA DOCTOR) $18.95 (retail) $14.95 (SDP)
* nine intellectually challenging computer classics; graphics and sound; good Star Trek game

☐☐☐ Lab Mouse   (by REEDY SOFTWARE) $13.95 (retail) $11.95 (SDP)
* exciting game that puts you in the role of a laboratory mouse stuck in a maze; all hi-res graphics; 5 skill
levels

☐☐☐ Entertainment Pack   (by REEDY SOFTWARE) $16.95 (retail) $14.95 (SDP)
* three challenging computer classics (connect 4, blockade, and slide puzzle); great graphics; fast animated
sprites; one or two players

☐☐☐ Stage Fright   (by REEDY SOFTWARE) $16.95 (retail) $14.95 (SDP)
* extensive text adventure in which you play the role of an actor or actress trapped in an abandoned theater;
some graphics and sound; easy to play -- challenging to win; game save option; three progressive levels of play

GRAPHICS DESIGN SOFTWARE

☐☐☐ ShowOFF I   (by DIGITAL EXPRESS) $29.95 (retail) $24.95 (SDP)
* graphics design package (enter text, draw polygons, paint, save pictures, etc.); fast color changes; a
variety of print options (preset for Epson FX / IBM 5152 printer codes); printing graphics requires Centronics
parallel interface for printer

☐☐☐ CLIPPER   (by DIGITAL EXPRESS) $19.95 (retail) $14.95 (SDP)
* introduces the concept of 'clip art' to ADAM; totally machine code program; build clip art collections; put
clip art in hi-res pictures; draw and edit clip art; also capture from hi-res pictures; enter text; change
colors; includes an 11K ramdisk (does NOT require 64K expander)

EDUCATIONAL SOFTWARE

☐☐☐ Spanish Vocabularian   (by MARATHON COMPUTER) $18.95 (retail) $16.95 (SDP)
* a unique program for ADAM; includes electronic dictionary; comes with 1600 words; expandable to 7400 words;
quizzes; printed study sheets; report cards

☐☐☐ QuikFax Quest   (by DATA DOCTOR) $18.95 (retail) $14.95 (SDP)
* three academic quizzes; includes study mode (on - screen and hardcopy); US capitals, world capitals, and
Chemistry elements

COLECO COPYRIGHTED SOFTWARE

☐☐☐ SmartLOGO   (data pack only) $23.95 (retail) $19.45 (SDP)
* Coleco's version of the popular structured language; good for graphics and sound control; 350+ page manual

☐☐☐ SmartFILER   (data pack only) $17.95 (retail) $13.45 (SDP)
* Coleco's general purpose database program; easy electronic filing system; search features; 38 page manual

☐☐☐ ADAMcalc   (data pack only) $25.95 (retail) $19.95 (SDP)
* advanced electronic spreadsheet; comes with sample templates; 154 page manual

☐☐☐ CP/M 2.2   (data pack only) $34.95 (retail) $29.95 (SDP)
* Coleco's version of the still popular operating system; 1000's of public domain supporting programs; 250+
pages

GUIDES/BOOKS/INSTRUCTIONS

□□□ Hacker's Guide (vol 1) (by Peter & Ben Hinkle) $12.95 (retail) $10.95 (SDP)
* The Hinkle's in - depth guide to the technical aspects of exploring ADAM; 60 pages; 18 programs

□□□ Hacker's Guide (vol 2) (by Peter & Ben Hinkle) $12.95 (retail) $10.95 (SDP)
* The Hinkle's detailed guide to SmartBASIC V1.0; 110 pages; HELLO program includes several BASIC fixes and enhancements

□□□ Hacker Software   (by Peter & Ben Hinkle) $5.95 (retail) $4.95 (SDP)
* all the programs from volumes one and two (above)

□□□ ez ref 101   (by DIGITAL EXPRESS) $2.45 (retail) $1.95 (SDP)
* approximately 700 Z80 instructions listed in NUMERICAL sequence; 9 pages; decimal, hex, op code, operands; good for disassembling machine code; holes drilled for easy binder insertion

□□□ ez ref 102   (by DIGITAL EXPRESS) $2.45 (retail) $1.95 (SDP)
* approximately 700 Z80 instructions listed in ALPHABETICAL sequence; 9 pages; decimal, hex, op code, operands; good for assembling machine code routines; holes drilled for easy binder insertion

□□□ ez ref 103   (by DIGITAL EXPRESS) $2.45 (retail) $1.95 (SDP)
* study of ADAM's EOS; jump table vectors, routines, setup for CALLs, exit register meanings; plus several assorted tables that have appeared in N&B; holes drilled for easy binder insertion

□□□ Pinball/HardHat Guide $2.45 (retail) $1.95 (SDP)
* 40 pages of instructions for the popular public domain package; holes drilled for easy binder insertion; includes Pinball reference chart

"NIBBLES & BITS" SOFTWARE

□□□ N&B binder01   (by DIGITAL EXPRESS) $32.95 (retail) $27.95 (SDP)
* all six issues from 07/86 thru 12/86; sturdy 3-ring binder; includes two DDPs or two disks containing all the programs

□□□ N&B binder02   (by DIGITAL EXPRESS) $32.95 (retail) $27.95 (SDP)
* all six issues from 01/87 thru 06/87; sturdy 3-ring binder; includes two DDPs or two disks containing all the programs

□□□ N&B issue programs   (by DIGITAL EXPRESS) $6.95 (retail) $3.95 (SDP)
* set01: all the programs from 07/86 thru 09/86
* set02: all the programs from 10/86 thru 12/86
* set03: all the programs from 01/87 thru 03/87
* set04: all the programs from 04/87 thru 06/87
* set05: all the programs from 07/87 thru 09/87

MISCELLANEOUS SUPPLIES

DDD Coleco/LORAN digital data packs $33.95 (retail--for 10) $4.95 (retail--each)
                                         $29.95 (SDP--for 10) $3.95 (SDP--each)
* designed and formatted by Loranger Manufacturing

DDD plain label digital data packs $19.95 (retail--for 10) $3.45 (retail--each)
                                         $17.95 (SDP--for 10) $2.25 (SDP--each)
* Sony brand formatted by E&T SOFTWARE

DDD plain lable 5.25" disks for ADAM $6.95 (retail--for 10) $.79 (retail--each)
                                         $4.25 (SDP--for 10) $.49 (SDP--each)
* double-sided; double density; includes envelope and write protect tabs

DDD printer ribbons for SmartWRITER printer $15.95 (retail--for 3) $5.75 (retail--each)
                                              $14.75 (SDP--for 3) $5.25 (SDP--each)
* black ink; standard replacement ribbon cartridge

DDD Panasonic printer ribbon $6.95 (retail--each)
                                         $5.45 (SDP--each)
* black ink; nylon; standard replacement ribbon for 1080, 1080i, 1090, 1091, 1091i, and 1092

DDD standard multipurpose adhesive labels $5.45 (retail--for 1000) $2.95 (retail--for 500)
                                             $3.95 (SDP--for 1000) $2.25 (SDP--for 500)
* white, pin-feed, 3 $1/_2$" by $1^9/_{16}$"; fan fold; single column

DDD multipurpose adhesive labels $9.95 (retail--for 1000) $7.95 (retail--for 500)
                                         $8.95 (SDP--for 1000) $6.95 (SDP--for 500)
* white, pin-feed, 4" by $7/_{16}$"; fan fold; single column

DDD word processing computer paper $4.25 (retail--for 250 sheets)
                                         $3.45 (SDP--for 250 sheets)
* white; pin-feed; 9 $1/_2$" by 11"; fan-fold; 20 lb. wt.; clean edge; one part

■■■■■■■■■■

DDDDD "SDP" stands for Subscriber Discount Price. N&B subscribers get a 5% to 25% discount off the suggested retail price of items listed.

DDDDD Unless otherwise noted, all software is available on disk or datapack.

DDDDD All DIGITAL EXPRESS storage media (disks and data packs) are warrantied to be free from defects in materials and workmanship. If the storage medium proves defective, return it to us for replacement or repair (at our descretion).

DDDDD The product prices listed herein may be subject to change after December 15, 1987.

■■■■■■■■■■

Public Domain Software Info

Public domain software is offered as a quick, inexpensive means for your to expand your ADAM
software library. Note, however, that public domain software is not necessarily of commercial
quality. Although, we do attempt to winnow out flawed programs, there is no guarantee of the
quality regarding these packages. If, however, the storage medium itself proves defective
within 90 days of purchase, we will replace it free of charge.

You may get any of the volumes described below on digital data pack for $5.95 or on disk for $4.95.
Subscribers also have an option to get a volume FREE (limit three per calendar month); this option
does not apply to volumes in the "Coleco PD library".

Here's how to get one FREE. (1) Contribute an original program for any library. (2) send a signed
statement that the program is NOT copyrighted. (3) send the program on DDP (digital data pack) or
disk; one DDP or disk for each volume that you want to exchange. And, (5) include a return mailer
with sufficient postage or send $2.50 for shipping costs.

SmartBASIC V1.0 LIBRARY

Each of these volumes is self-booting with SmartBASIC stored on the volume. When you pull the
reset, a graphic screen will be displayed as BASIC loads. 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 for easy file selection. Each volume contains over 125K of files.

N&Bgames (volumes 1, 2, & 3): an assortment of text adventures, board games, and animation games.
N&Bgraph (volumes 1 & 2): a variety of graphics displays and music programs.
N&Bmath (volumes 1 & 2): several scientific and financial math programs.
N&Butil (volumes 1 & 2): an assortment of programming utilities.

SmartPAINT FILES LIBRARY

In order to view/use the hi-res picture files in this library you need SmartPAINT (from ShowOFF I)
or the HGR Picture Manager program (02/87 N&B, page 16).

N&Bpix (volumes 001 thru 011): 13 files each.
Art Gallery (volumes 1 & 2, compiled by REEDY SOFTWARE): 13 files each.

Coleco PD LIBRARY

SmartBASIC 2.0: improved interpreter; 49K file; works with or without 64K expander
Pinball/HardHat Mac: latest version with two demo games; 1 to 4 players.
ADAMlink II: supports up and down loading of SW compatible files; includes U/D docs.
Jeopardy: just like the game show; greate graphics; 1 to 3 players.
Super SubRoc: 90K arcade-type games; super graphics; hall of fame.
Troll's Tale: Easy graphic adventure; supports one player; disk & DDP not compatible.
Video Hustler: graphic billiards game; 1 or 2 players.
Disk Manager: file handling utility; the program that comes with a disk drive.
SmartBASIC 1.0: a replacement for the BASIC that came with your ADAM.

CP/M 2.2 LIBRARY

CP/Mgames (volumes 1 & 2): assorted EBASIC (included) games.
demo carts: requires 64K XRAM card; music samples, system tester, much more.
CP/Mutil: a variety of utility .COM files for CP/M.

PINBALL GAMES LIBRARY

PBgames (volumes 01 thru 04): 10 pinball games each; self-booting.

MISCELLANEOUS COLLECTIONS LIBRARY

MWplus01: a collection of improvements to MultiWrite (required).
N&Bacalc01: several paradigm and other files; 148K.
EZpak: self-booting medium; contains EZmenu & EZcopy.
ezFILER: self-booting medium; contains nic BASIC address filer.
SHAPEMAKER: several font shape tables; nice shape design utility.
N&Blogo01: a variety of SmartLOGO (required)

Volume Title: N&Bpix007
(13 hi-res pictures in SmartPAINT format)

sunset.HRP (rural sunset scene)
letter.HRP (a scroll with quill and ink bottle)
jet.HRP   (top and rear drawing of a LARJET)
krull.HRP (drawing of a krull star)
spiral.HRP (spiral of five sets of squares)
Sagan.HRP (enhanced digitized photo of astronomer Carl Sagan)
tardis.HRP (the police box time machine of Dr. Who)
DrWho.HRP (logo of the famous British sci-fi)
Bill.HRP   (drawing of Bill The Cat)
Vader.HRP (bust of Darth Vader, the Dark Lord of Star Wars)
ADAM.HRP   (ADAM in large letters)
system.HRP (drawing of an ADAM computer system)
monstr.HRP (digitized photo of a famous Japanese monster)

Volume Title: N&Bpix008
(13 hi-res pictures in SmartPAINT format)

ssLBL.HRP (single-sided graphic disk label; for 4" x 1.75")
dsLBL.HRP (double-sided graphic disk label; for 4" x 1.75")
cpmLBL.HRP (CP/M 2.2 graphic disk label; for 4" x 1.75")
Mona.HRP   (characterization of Da Vinci's Mona Lisa)
Road.HRP   (drawing of the "Road Lord" from Spy Hunter)
Trek.HRP   (large starship enterprise from Star Trek)
logo.HRP   (DIGITAL EXPRESS company logo)
cover.HRP (part of the issue cover graphics for N&B)
xrated.HRP (you have to see this one to believe it)
tape.HRP   (detailed graphic drawing of an audio cassette/DDP)
STlogo.HRP ("STAR TREK" in giant letters)
CTV.HRP   ("CTV" logo)
geom.HRP   (geometric conglomeration)

Volume Title: N&Bpix009
(13 hi-res pictures in SmartPAINT format)

Sarge.HRP (cartoonized drawing of a British police sargeant)
C-Lion.HRP (an ornamental Chinese lion)
ladies.HRP (three ladies of cartoon fame)
mm3.HRP   (cartoon teen)
mm7.HRP   (cartoon teen singing)
mm9.HRP   (same teen in another singing pose)
oval.HRP   (drawing of cartoon character Captain Oval)
Lynn.HRP   (Lynn Minmay)
RicLin.HRP (Rick and Linda cartoon characters)
Rick1.HRP (cartoon character)
Rick4.HRP (cartoon character in auto racing attire)
Roy.HRP   (cartoon rock star)
s-1.HRP   (cartoon machine)

PRODUCT ORDER FORM

YOUR NAME _____
ADDRESS _____
CITY _____ STATE _____
ZIP _____ PHONE _____
ID NUMBER _____

PRODUCT	QNTY	MEDIA	PRICE

Subtotal →	.
Shipping →	.
Tax →	.
Other →	.
Subscription →	.
Grand Total →	.

TAX:
- applies only to residents of West Virginia
- compute as 5% of order subtotal

SHIPPING:
- inside 48 contiguous states: $3.00
- elsewhere: $4.50

TO ORDER:
- complete this form; send check or money order (US FUNDS) to:

DIGITAL EXPRESS
P.O. Box 37
Oak Hill, WV 25901

- *THANK YOU for shopping with DIGITAL EXPRESS* -