NIBBLES & BITS

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DIGITAL EXPRESS

CREATIVE COMPUTING
FOR THE ADAM

PUBLIC NOTICE

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GENERAL INFORMATION

Most issues include a special offer on software purchases; these are explained as time limited offers. If you receive N&B outside the North American continent (Australia, Isreal, England, and South Africa, for example), we will extend these deadlines to you by 30 days.

If you have products or services of interest to ADAM owners, please let us know. We try to keep our readers apprised of all the latest news concerning the ADAM. Also, we offer free announcements in the BULLETIN BOARD section of the newsletter; please submit these at least 15 days prior to the first day of the issue month. We also offer half page (7" across by 4.5" down) commercial advertising slots for $50.00 per issue (effective April 1, 1988). "Camera ready" artwork must be received at least 30 days prior to the first day of the issue month. Circulation: 2400+.

Product orders are processed within 24 hours of receipt. Where possible, orders are shipped via UPS. Backordered items are shipped at our expense. Order processing may be delayed by legal and traditional holidays.

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EDITOR'S NOTE

As you can see by the size of "my" column this month, I'm making up for its absence last issue. And, I have one central theme -- the longevity of ADAM.

Who would have ever thought that so much would be available for ADAM three years after Coleco dropped it from production? What keeps all these ADAM owners adding to their systems?

One could mull over all sorts of ideas, but there are a few bottomline considerations that keep anyone interested in a particular computer. What can the system do for me? How easy is it to use? How much hardware and software support does it have? How expensive will it be to upgrade? How much does software cost?

ADAM has as much new hardware and software as just about any other system currently in production. The variety is staggering to newcomers and novices. If you'd like to see how hot ADAM is, put one up for sale on an ADAM supported electronic bulletin board. At reasonable prices, they don't last long. Many ADAM owners have friends and relatives who want one. New support companies are popping up all over the country. New publications entering the market are more than filling the gap caused by the weaker (and less dedicated) newsletters that have dropped out. In short, as many of us long time ADAM owners are aware, support has never been better for Coleco's orphan. If you've read any ADAM oriented publications in the last six months, you're surely aware of the surge in product development.

Is there anything that could undermine or hinder this enthused growth? Is there a weak link to the flurry of expansion capabilities? Yes, there is. The culprit is a highly contagious virus; and the paradox is that while ADAM owners are encouraging growth with their purchases, many others, infected with the virus, are working in the opposite direction. In effect what we're seeing in the way of new, powerful software amounts to a "house of cards". The virus is threatening to "blow away" the foundation -- commercial software support.

Did you know that more than a half dozen of the leading software developers for ADAM (including DIGITAL EXPRESS) are giving serious considera- tion to slowing down or halting altogether the development of new products? It's a fact.

You've probably already guessed that the virus is piracy. I'm usually one who looks on the brighter, more positive side, of any situation. Some would call me a fatuous optimist. Yet even I must admit that something usually considered petty, such as piracy, threatens the survival of ADAM.

All too often the application of the term piracy seems to have a euphemistic connotation. Piracy is theft. It is stealing. And, it is certainly illegal. Yet, piracy thrives ... it grows with a reverse pyramidic or exponential rate compar- able to an epidemic virus.

The idea of "getting something for nothing" seems to be at the heart of the action. And it is fueled by confidence of impunity. Who'll ever know? You can't get caught. If you can get it for free, why pay for it? The fact is that the entire computer industry, not just the ADAM market, is on shaky ground due to the devastating blows of piracy. And, with less than a quarter million ADAM owners, piracy has an even more intensely adverse effect on the small firms offering support.

One rationalization employed by those heavily involved in the act of electronic theft is that piracy gets the product into the hands of more people and thereby helps with the marketing of the product by making it more popular. Yes, it certainly does get the product into the hands of more people. But the concept is as ludicrous a non sequitur as a bank robber stating that his crime puts more money into circulation and thereby builds a stronger economy. Think about it. Sure the recipient of a pirated software title reaps an immediate benefit ("something for nothing"), but the long range effect is far from positive.

One advantage that we ADAM owners have is that many of the original large scale pirates have switched to different computers. But, the virus they nurtured still proliferates. One fellow passes an illegal copy on to a couple of friends. They each, in turn, do the same. And, again and again. Before you know it that one legitimate purchase produces a dozen stolen copies. What can we do to stop it? Just say NO. When someone offers you an illegal gift or trade, just tell him (or her) that you'd rather support the system than undermine it.

Now there's also another form of piracy much broader in scope and just as devastating to the future of ADAM. It is piracy rings fronting as users' groups. What a diabolical joke! The purpose of a user's group is to foster growth and the ultimate effect of a cabal of pirates is to eradicate a market. I know full well of two piracy rings fronting as users' groups to the extent of publishing a newsletter ... no doubt, snickering at the inner circle meetings extol- ling their deceitful cleverness.

What does the future hold? What can be done? One move which you'll see very soon is an intricate network of copy protection and serialization on virtually all commercial software for ADAM. But, as most hackers and any pirate can tell you "all CP schemes can be infiltrated". The final decision rests with you the ADAM user. Don't give in, even tacitly, to the lure of "something for nothing". Just say NO. The longevity of ADAM depends on you.

ADAM NEWS AND UPDATES

□□□ Coleco has undergone some changes recently. Unless it can restructure its $300+ million US debt and raise working capital, Coleco could soon wind up in bankruptcy court seeking protection from its creditors. Morton Handel has replaced Arnold ("Arnie") Greenberg as chairman and CEO.

In an effort to cut costs, Coleco laid off 475 more workers. They're now down to 580 employees in the US, compared with an average of 2500 in 1987. It is also reported that they are considering selling off a toy line and software rights to raise cash.

Despite their numerous successes (Cabbage Patch Kids, ALF, Big Wheels, Trivial Pursuit, and ColecoVision), Coleco (COnnecticut LEather COmpany) is in its worst financial situation ever. The computer they bore and then tried to murder still survives. The number of dedicated users seems to grow with each passing month -- powerful software and hardware are coming out for the orphaned system at a staggering pace. It appears that the computer could actually outlive Coleco.

□□□ "Computer Shopper" Magazine did start their series of articles on ADAM as reported last month. The first article spanned four pages. It was a little weak (included some language errors in a couple of programs) but overall had good information for readers. If you are already a subscriber, write to them and let them KNOW that you appreciate the coverage. If you're not, subscribe and LET THEM KNOW WHY. It's great to see a national magazine including ADAM again!!

□□□ OrphanWare has revamped their company; the new (official) name is OrphanWare Business Systems. In addition to continuing and expanding their fine line of hardware for ADAM, they're also going to start manufacturing IBM AT & XT compatibles.

□□□ OpenFILER is a new program by Acolyte Software. It converts SmartFILER databases to standard ASCII files which can be transferred via modem and used in SmartBASIC.

□□□ OrphanWare continues its innovations for ADAM. New EPROMS are available for disk drives which allow you to use four disk drives (plus up to two tape drives and a ramdrive) directly from SmartBASIC. See the article in this issue (USING SEVEN ADAM DRIVES) for more details. The EPROM is only $29.95. They have a new real time clock for ADAM (it plugs into the first internal slot) for $49.95. It includes user selections for an interrupt. Thus it can emulate the EVE Electronics clock or be used for more advanced applications. They have discontinued the OrphanWare repair center; but, "Big John" will still repair disk drives. And, the hard disk interface is on the "back burner" until more ADAM owners express an interest. In addition to their 320K and 720K disk drive upgrades, they're now working on a 1.44M upgrade using quad density 3.5" disks.

□□□ D.L. Decker Enterprises will be kicking off their new bimonthly disk (or data pack) club soon -- these are very popular with other computers. Every other month, members will receive a disk (or data pack) FULL of ADAM news, general items of interest, language programs (BASIC, LOGO, or CP/M), and review of ADAM software, hardware, and books -- 130K - 150K each issue. In addition subscribers will receive a discount on the large variety of products carried by D.L. Decker Enterprises. Until 31 August they're offering a charter subscription for $34.95 (on tape) and $29.95 (on disk). In September the rates go up by five dollars. A sample issue is available for $9.95.

□□□ Wizard's Lair has released another volume of professional quality clip art for use with PowerPAINT. "CLIP ART 1" and "2" each contain more than 40 clip art files plus a large workspace composite of the files. Both are available from DIGITAL EXPRESS.

□□□ Many ADAM owners have permanently attached 64K of RAM chips inside their computers to save on the expense of getting a 64K card to plug into the third internal slot. Be warned that this dedicates the system to 64K; you can not upgrade to 128K, 256K or 512K.

ADAM NEWS AND UPDATES continued ...

□□□ For the latest additions to the DIGITAL EXPRESS product list refer to page 26 of this issue -- NEW PRODUCTS. There are several including a new DIGITAL EXPRESS title and 12 new PD volumes.

□□□ DIGITAL EXPRESS is continuing the PD special. Buy 10 volumes on disk for only $39.95 and get another of your choice FREE (or get a free PD coupon). Buy 10 volumes on DDP for $49.95 and get another of your choice FREE (or get a PD coupon). Offer ends September 1.

□□□ To help handle the 1000+ renewals due in September, we're offering a special deal. Renew for a year and a half (18 months) for $35 and get "N&Bset07" free. Offer expires July 1.

□□□ June 30TH marks the end of our fiscal year. Since this entails a lot of bookkeeping we're offering a special inventory reduction sale -- buy one commercial software title (any firm) and take a 1% discount off your total order. Buy two; take 2%. Buy three; take 3%. Buy four; take 4% -- buy five or more; take 5%. This very special offer will NOT be repeated this year. Also, for any order with a subtotal greater than $59.95 take your choice: BIC roller pen (black ink, medium point) or blank diskette -- FREE. Offer expires July 7.

□□□ We're offering a software manual update special until September 1. We'll replace your PowerPAINT, ShowOFF I, ShowOFF II, SpritePOWER, FontPOWER, CLIPPER, or Intel-BEST 3.3 manual with a more durably bound manual (done with our new punch and bind machine) for only 50 cents each (25 cents each if you purchased the particular title after April 1 and did not get the new cover). You must send in your old manual and a copy of your sales receipt. Offer expires September 1.

□□□ Alan Neeley (A-NET innovator) will have an article next month on how to use the ADAMlink or a 1200 baud modem. Also John Lingrel (OrphanWare) will start a series of articles next month on designing hardware for ADAM.

□□□ After a few commercial titles have been developed for use with GoDOS; we'll offer an EPROM update service (projected price $10) to registered purchasers. You can plug the EPROM in vice the SmartWriter ROM (instructions will be provided). Thus when you pull the computer reset on ADAM, you'll be in GoDOS. We're also considering an 80 column version of GoDOS.

□□□ Two more DIGITAL EXPRESS specials. Get two Panasonic black ribbons for ONLY $8.95. Get 25 DS/DD disks for just $9.95; with sleeves and write protect tabs. Offers expire July 7.

□□□ AJM SOFTWARE (FILE MANAGER) has two new utilities for ADAM: DISK DOCTOR and FILE INDEXER. We'll have more details next month.

□□□ We're working with a new ADAM company, Computer Quorum of America, in the development of question packs for use with the popular Jeopardy game. The first one should be available in a few weeks.

□□□ We're also working with another new ADAM company, DigiTRONIX, in the development of arcade speed, graphic games. The first package, a shoot-em-up game, will be available this Fall.

□□□ DUE CREDIT. Brett Lymn, of Australia, was the first to publish documentation on building an internal 64K memory expander (more than two years ago). Mike Hilker, of California, is the author of the instructions for converting an Atari CX-85 10-key for use with ADAM and for converting a Commodore 1350 mouse for use with ADAM.

□□□ Some of the leading software developers for ADAM are working together on the development of a new alliance to have a common resource for fighting piracy in court. The primary impetus for this move has been the discovery of a piracy ring operating in Iowa selling many commercial titles at ridiculous prices.

□□□ "MagNET" is a new hardware oriented, newsletter for ADAM published by the Manitoba ADAM Group (headed by Eric Brennan). They plan to have 11 issues per year; subsciptions just $20. We should have more details next month.
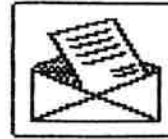
□□□ Carol Tapia is interested in starting a users' group in the north Texas area.

1001 South Hwy 78, nmbr. 20
Wylie, TX 75098

□□□ AWAUG, headed by Bob Blair, is a new group with a bi-monthly newsletter and a BBS. Just $15.

7814 Worthing Court
Alexandria, VA 22310

LETTERS TO THE EDITOR

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.

EVE ELECTRONIC SYSTEMS

EDITOR'S NOTE: John R. Lingrel, of OrphanWare, sent us the following letter for publication. A copy was also sent to Eve Electronic Systems. (To date EVE has not replied.)

SIR(S):

I have received several of your ADAM 80 column displays (both the VD-MB and the VD-MON) from your customers for repair recently. All have stated that you do not answer your phone or mail and as a result, they have contacted me.

While I have the documentation for the LINGER video display board (on which your adapters appear to based), I still need to know what you did to it without having to trace out the PC boards. I would like to know how you are driving the video switching relay and the SP-1 address for your keyboard emulation.

Also, I need to know the contents of the ROM for the various fixed emulations that you provided. I have LINGER EPROMS, but yours appear to have some slight modifications.

I am not sure of the legal requirements for product support; but, if you wish, we can discuss the possibility of OrphanWare taking over product support for all EVE products for the remainder of your legal obligation to support those items that you manufactured.

If you can not supply this information, I will refer your customers back to your for required repair services.

SPARE PARTS FOR ADAM

I'm not much of a contributor to N&B, but I thought that your readers would like to know of a company that has game controllers and power packs at fantastic prices for the ADAM. They are the most prompt and considerate company I have ever ordered from and I highly recommend them -- H&R Corporation, 401 East Erie Avenue, Philadelphia PA 19134.

Bev Murphy
Inverness, FL

A CLEAR SCREEN WITH ADAM

I own three ADAMs and all of them have a "dirty" display even hooked up to a computer monitor. If you pull and hold either reset button, the slight interference generated by the computer ceases as the internal processing apparently freezes. I realize the ADAM is a complicated machine as it is a sophisticated game player plus a regular computer. I was wondering if there are any tricks or modifications that would allow for a cleaner display?

Roy London
Fairfield, ID

IN RESPONSE: I have three suggestions; I've had similar problems myself. First is make sure that the line filters are connected that Coleco supplied with the computer. Although these are intended to prevent interference outside the computer, they do seem to help with the quality of the screen image. Also, you should band your excess video patch cable and try placing it at different locations. By experimenting with these two, I think you'll find that you can get a much clearer display. And, make sure that your system is properly grounded.

OVER THE PHONE LINES
by David E. Carmichael
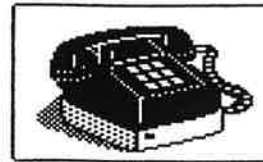
EDITOR'S NOTE: This month we extend our warm congratulations to David and Connie Carmichael for their recent wedding. David and I have been corresponding almost since the inception of DIGITAL EXPRESS. He is a friend; and, due to this friendship I'll be joining him on PLink (he's the ADAM section six chairman on the Computer Club) this Fall for an online conference. Those who are interested in participating should notify David or I before the end of August.

One of the strange things about computer telecommunications using ADAM is the lack of a good EOS based XMODEM protocol file transfer program. As most ADAMLink modem users know, ADAMLink II software transfers files in EOS using ASCII/TEXT/CAPTURE mode. This means that any bits of stray phone line noise could destroy the file that you had just spent time downloading. When using this ASCII form of file transfer protocol you have NO error checking to make sure that the data that is being received just as it was sent!

Sure the CP/M users out there are saying that you have four or five different software packages to choose from that use the XMODEM protocols. But many of the everyday ADAM users do not want to take the time to learn how to use CP/M.

Without CP/M, then, all modem file transfers on ADAM have to be in ASCII form. You can not, for example, transfer a FontPOWER font set (which is stored in binary format). Even with the CP/M, the process is rather involved. To do this I have to first convert the file using ADAM.COM after booting CP/M. Then I have to run my XMODEM protocol software package. I have now spent about 30 minutes just getting the file ready -- even for a small file of only 2K. Plus it takes about one minute to send 1K at 300 baud using ADAMLink modem.

You can see where a program that could read the EOS disks and send files using XMODEM protocol would be a great time saver for ADAM users. For some good news, Tom Clary has done some work with adding XMODEM to ADAMLink II; the update is known as ADAMLink III. While for the most part this is a good program and quite a time saver, it does still have a few minor bugs. One is that using the program tends to erase any files that were stored on a ramdisk.

Another is that transferring some BASIC binary files, such as FontPOWER font sets, somehow offsets the load address. This can cause BASIC to crash if you try to BLOAD the file. Other than files that BLOAD into a specific area of the operating system, such as binary font & sprite files, I have had no trouble with any other form of ADAM EOS files that can be opened and read using ADAMLink III. It works just great with VideoTunes, Smart-TUNES, BASIC binary fast load, BASIC binary data files, and HGR graphic files. ADAMlink III is available from Orphan-Ware Business Systems for $19.95.

ADAMlink II USAGE TIP

This tip is from the Puget Sound ADAM NewsNET. You can save a record of your modem call for future reference. After getting online, press the WILDCARD key to go into command mode. Press SmartKEY VII (FILE). Now press Smart-KEY II (RECEIVE). You'll be prompted for the drive and filename. When finished, press SmartKEY III (DONE). You are now back in command mode. Press the WILDCARD key again; this lets you resume the on-line communication in termi-nal mode. Now everything you see on your screen will be saved in your file! When done for the session, press the UNDO key to close the file.

USING SEVEN ADAM DRIVES
by Solomon Swift
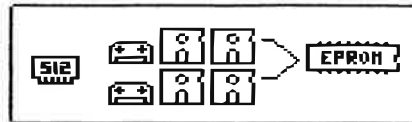
How would you like to have a powerful capability of accessing seven drives on your ADAM directly from SmartBASIC? Thanks to more innovations from OrphanWare and a couple of POKE tricks, it is possible. Within 10 minutes of opening the box from OphanWare that had the new disk drive EPROM chip in it, I was running three disk drives from SmartBASIC (Roger Fillary of the U.K.A.S. also discovered the BASIC POKEs independently).

Since this was a new product, the instructions hadn't even been drafted yet. John just had a short note, "replace EPROM in a 160K drive". Sounded simple enough even though I knew virtually nothing about hardware assembly. It was easy to find a chip with a similar design, but since there are many who may have never had the cover off their disk drive, I've got some simple instructions below. As with any hardware assembly, proceed at your own risk. And, keep in mind that you may void any warranty which is currently in effect on the drive.

First, though, let's take a look at the software end. There are three versions of the chip: 160K, 320K, and 720K. When ordering ($29.95), be sure to specify the drive size. One of the immediate benefits is the ability to format four disks simultaneously -- you can actually format four 160K disks in just 60 seconds. I've included a simple program on the next page, 4-mat, which allows you to do this. How to use the program is detailed under "PROGRAM EXPLANATIONS".

As with all the hardware innovations, particularly those from OrphanWare, software seems to grow around the product. Alan Neeley's A-NET is already setup to handle seven drives -- great for a multi-drive database. You'll no doubt start seeing more applications similar to this. You might even develop a program yourself. And, next month we'll have a patch for PowerPAINT which allows you to use a third disk drive vice the second tape unit.

As some are aware, Coleco originally intended to offer the console with the capability to upgrade to four tape drives. All we need to do is take advantage of the codes left in SmartBASIC to make the minor changes. Four disk drives are certainly more desirable than four slow tape drives. When we're done "d1" will be tape one, "d2" will be tape two, "d3" will be disk three, "d4" will be disk four, "d5" will be disk one, "d6" will be disk two, and (if you have a RAMdisk utility) "d7" will be the RAMdrive.

For both SmartBASIC 1.0 and 2.0, CALL 64605 first. For SB 1.0, POKE a "6" into 23275 and POKE a "7" into 23276. For SB 2.0, POKE a "6" into 22306 and POKE a "7" into 22307. Then just use the drive suffixes to access each drive.

INSTALLING THE EPROM

You'll be removing four sets of screws; it's best to use a magnetized screwdriver because some of them are difficult to put back otherwise. Be sure to completely unplug the drive!! You'll need a workspace of about two square feet.

Place the drive upside down and remove the six screws on the bottom (four are attached to rubber spacers). This allows you to remove the two side plates. Now look inside and remove the four screws attached to the top (two each side). After you lift the top off, remove the two screws on each side of the assembly. Then carefully stand the drive on end and remove the two screws attached to the facing. Now remove the four cables attached to the head assembly (be sure to note how and where they're connected). When you lift off the head assembly, you can see the EPROM just behind the rocker switch (on/off) on the circuit board -- it's shaped just like the new one and probably has a dated sticker on top. Pry it up with a thin flat head screwdriver -- take care to not bend the teeth. Now insert the new EPROM (notched side to the front) and reassemble the drive. The entire procedure should take about five minutes. And with the POKE tricks you now can access four disk drives; use the selector switch on the back to set it as a third or fourth drive.

ASSEMBLY LANGUAGE AND CP/M 2.2
by Guy Cousineau
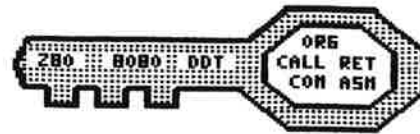
Writing assembly language programs can be frightening to the beginner; that's normal. I hesitated for a long time and finally decided to get started. After fighting with 8080 mnemonics, I acquired a Z80 assembler and a full screen editor ... WHAT A DIFFERENCE. I find Z80 mnemonics much easier to understand and, of course, more versatile. It is certainly a good investment if you want to really get into assembly programming.

Remember that you must learn to crawl before you can walk: start with short, meaningless programs and move on to bigger projects from there. The best way to start is to work with screen input and output. These are the easiest to understand and you can create something with just a dozen lines of code. The next step is to work with number manipulation, or even string manipulation. After that, you should be ready to tackle the big stuff, such as disk input and output.

Write a program that does something, anything at all. Assemble it and load it, then try it out. Remember that programs may not always do what you want, but they will always do what you tell them to. If a program misbehaves, blame yourself. Try to figure out what went wrong; DDT is useful for this. A typical start program could be something like this:

```
org   100h    ;start here
ld    e,'a'   ;character 'a'
ld    c,2     ;console output
call  5       ;BDOS does the rest
ret           ;exit
```

Now that wasn't so hard. When this is done, type:

ASM TEST   <RETURN>

"ASM" is the name of your assembler. "TEST" is the name of your program. After a little practice, you should get no error messages and at the CCP prompt. Now type:

LOAD TEST   <RETURN>

This creates an executable command file from the data created by your assembler in the TEST.HEX file. The LOAD program will tell you how long your program is (don't worry about that for now) and will return you to the CCP. Now type:

TEST   <RETURN>

There is disk activity whil the program loads in and then the "a" character should appear on the screen ... success!

Remember to read the instructions on the use of the EDITOR, the ASSEMBLER, and the LOADER before trying to do any of this. There are also several good beginner books; get one and follow along. In addition, you should be able to get a disk of beginner programs from the DIGITAL EXPRESS PD library. This disk includes fully commented source code for several programs intended to guide you through more advanced levels of programming. They assume that you have some knowledge of the DMA, FCB, BDOS, etc. The programs include utilities such as a single drive copy program, a file splitter, a hex-dec converter, and others.

If one of your machine language programs goes wrong, you may need some help in finding the problem. This is where DDT comes in handy. To check the program above, type:

DDT TEST.COM

DDT loads in and reads the TEST.COM file and prints a prompt. First, let's make sure we have the right program by typing an "L".

```
0100  MVI   E,61
0102  MVI   C,02
0104  CALL  0005
0107  RET
0108  NOP
0109  NOP
010A  NOP
```

Wait a minute, that's not our program! But it is because DDT is an 8080 disassembler which uses 8080 mnemonics (not Z80). Looking in my book, I see that MVI is the same as the Z80 LD instruction. So the first line reads: put "61" in register "E" and "61" is the HEX code for a lower case "a". Now everything seems okay. More next month.

ELECTRONIC BULLETIN BOARDS
by Solomon Swift

We use our ADAMs for many tasks from graphic, fast action games to keeping track of the records for a small business. The primary uses do tend to vary from person to person, though. But, the one application of the computer that most of us share is accessing electronic bulletin boards. And, the best aspect of this is that just about any two computers can "talk" with each other.

The big boards with nationwide multiple lines are usually called information services. Even though these systems do offer a huge variety of services, the most common use by the typical home user is the message boards ... special interest groups, computer clubs, and round tables. Still, though, these big, popular systems have access fees which can put a strain on conservative computer budgets. One alternative is to log on with the free, privately run bulletin boards. And, the number of boards actually run on ADAMs is on the increase. We have two very good BBS programs available: ADAMcastle (for CP/M use) by Shawn Merrick and A-NET (for EOS use) by Alan Neeley (he's practically rewritten a freeware program).

With all the systems now up, it's usually best to try to access several. Each month we'll try to list a few ADAM supported BBS's. Let us know of your favorite boards (even if you're the SYSOP). Try these:

ROCKY MOUNTAIN BBS (SYSOP Jesse Thornhill, II) 8pm - 8am (MST) Tue - Fri; 24 hours on weekends and holidays. (719) 783-9046.

GAS COMPANY (SYSOP Mike Henderson) 24 hours daily. (817) 265-8938.

ST.L.AUG BBS (SYSOP Al Fitzgerald) 9pm - 2am, Thr - Sun. (314) 773-1551.

We had been considering starting our own N&B bulletin board. I was even talking to Big John (at OrphanWare) about setting up a system like his. During the (long) conversation, we decided that it would be better for me to join him on the OBS BBS. And so it was.

I log on three or four times a week; please feel free to "drop by". But, the best news is that the OBS BBS is now the "official electronic distribution center" for *Nibbles & Bits* programs. We offer program disks quarterly; but, for a good program, three months can be too long to wait for the issue disk (and typing them in can be a very time consuming task). Now you can just download them directly from the BBS after the 7TH of each month; use ADAMlink III or CP/M (and convert back to an EOS file). Plus, he has several megabytes of PD software ready for downloading. See the OrphanWare ad in this issue for log on details.

Even better is that Big John offers some _very special_ prices on hardware and software from time to time. These are mentioned in the bulletin section. And, he's currently running a contest in which the person who leaves message number 2000 wins a FREE 320K disk drive! There are some restrictions and guidelines; you'll need to read the file concerning this. At the current rate of calls, the board should reach 2000 before the middle of July ... so give us a call!!

EXPLORING SMARTLOGO
by Leonard F. Adolph
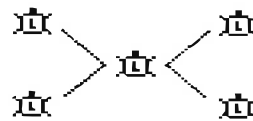
EDITOR'S NOTE: We've published several of Mr. Adolph's articles in N&B. This issue we're starting his new series on working with Coleco's SmartLOGO. Many people have wanted to explore the routines used by the language; next month we'll list his SmartLOGO disassembler. The picture below (to the right) is a correction to the one which appeared in his article on modifying a standard game controller (we goofed) in the April issue.

LOGO is derived from the Greek word *logos*, meaning "word" or "thought". The language was written by Seymour Papert and others during the late 60's to encourage creative thinking by children (particularly in geometry). When we hear the word LOGO, most of us think of kids drawing simple geometric pcitures with turtles. However, LOGO is much more than that.

LOGO is basically a scaled-down, user friendly version of LISP (LISt Processing). LISP was devised in the late 50's for work in artificial intelligence. The two major challengers to LISP for AI work are PROLOG and ADA -- PROLOG is popular for AI work, but it wasn't written for that purpose. ADA is the Department of Defense standard for AI work; and, the DoD holds all rights to it. LISP, PROLOG, and ADA require large amounts of memory, but LOGO is not so memory intensive. In fact, we ADAM owners have a good version, SmartLOGO, available to us.
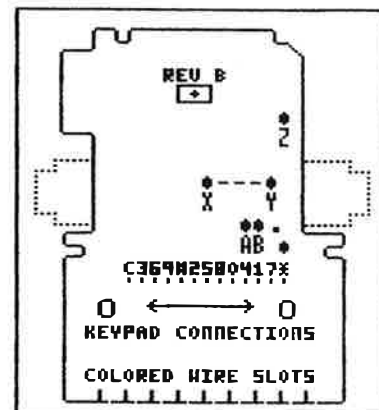
The basic LOGO building blocks are: numbers or words, word lists, and procedures. Numbers are just that, such as 65 or -3.49. Words are alphanumeric strings separated by a space, such as: A ALPHA B2. Words are similar to atoms in LISP except that unlike atoms, words can broken down into individual characters. A list is a sequence of words separated by spaces. Procedures are the basic elements used in programming; in LISP these elements are called functions. A procedure consists of the procedure name and the set of data and/or instructions on how that procedure is to be carried out. Primitives are the built-in commands of LOGO.

The major difference between LOGO and LISP is in the use of turtle graphics. In addition, SmartLOGO has commands that make use of the sound chip. With SmartLOGO all three of the tone channels and the noise channel can easily be used. By the way, if some sharp hacker is interested, turtle graphics could be added to any language, even BASIC.

Much of the fun of turtle graphics is discovering for yourself what can be done. Also, the "Turtle Talk" section of the SmartLOGO handbook will get you going quite nicely. For these reasons I won't delve too deeply into LOGO graphics.

But to keep you thinking, here are two simple graphics programs (on the next page). The first one, SUN, is a simple animation using three turtles. The program (BUGTRIP) is based on an old problem. If four bugs start at the corners of a square and walk at a constant speed always in the direction of his neighbor to the left, how far will the bugs have travelled when they meet?

PROGRAM NAME: S U N

```
TO SUN
TELL ALL HT HOME CS
TELL [0 1 2]
ST PU
TELL 0 SETSH 4 SETC 11
FD 60 RT 90
TELL [1 2] SETSH 15
TELL 1 SETC 10
TELL 2 SETC 1 BK 5 LT 90
ROT
END


TO ROT
TELL 0
MAKE "STEPSUN 2 * 60 * 3.1416 / 180
RT 1 FD :STEPSUN RT 1
TELL 2
MAKE "STEPSHADOW 2 * 5 * 3.1416 / 18 0
RT 1 FD :STEPSHADOW RT 1
ROT
END
```


PROGRAM NAME: B U G T R I P

```
TO START
CS TELL ALL HT PU
TELL 0 SETPOS [-90 -90] SETH 0
SETPC 9 PD
REPEAT 4 [FD 180 RT 90]
TELL ALL SETPC 15
TELL 0 PU SETPOS [-90 -90] SETH 0 PD ST
TELL 1 PU SETPOS [-90 90] SETH 90 PD ST
TELL 2 PU SETPOS [90 90] SETH 180 PD ST
TELL 3 PU SETPOS [90 -90] SETH 270 PD ST
BUG
END

TO BUG
TELL 3 SETH TOWARDS ASK 0 [POS]
TELL 0 SETH TOWARDS ASK 1 [POS] FD 1
TELL 1 SETH TOWARDS ASK 2 [POS] FD 1
TELL 2 SETH TOWARDS ASK 3 [POS] FD 1
TELL 3 FD 1
ON.TOUCH 0 3 [TELL ALL HT]
IF ( DISTANCE [0 0] ) < 1 [STOP]
BUG
END
```

ADVANCED PROGRAMMING
by Solomon Swift

SECRETS
REVEALED
HEREIN...
......

INTRODUCTION

Many of our readers have expressed an interest in Z80 programming on ADAM. In fact, if you've tried to reach me on one of the designated call-in nights and haven't gotten through, the chances are that I was working with another caller on Z80 fundamentals. Most people are a little skeptical when I say that machine code is easy. It really is. Moreover, this article kicks off a new reader activity -- a sort of N&B correspondence school for learning Z80 on ADAM.

Since teaching is my former profession, I'll hopefully be good enough at this to help you delve deeper than you already have. Each month I'll have a few programming exercises for you to try. Send in your answers on paper (a program LIST may also be needed) preferably typed (but handwritten okay) and a COPY of it along with an SASE, I'll grade the copy (with comments) and return it to you in your envelope. Don't worry about not knowing; just do your best with your current knowledge of the system. No one else will see your reply; ANYONE may participate. All I ask is that you put forth an earnest effort and that you follow the guidelines just mentioned; you may also call me for help (during the technical call-in times).

Why am I doing this? There are few reasons. Many have expressed an interest. It may help you get more out of using ADAM. And, hopefully, some of you will go on to produce commercial software for ADAM written in machine code. This will benefit us all.

LESSON ONE

We're going to assume that you at least have a rough idea of what the hex and binary number systems are. You might also want to start reading the "HACKER'S DELIGHT" section in the back issues of N&B. I'd also recommend that you get the following if you don't already have them: EZ REF 101, EZ REF 102, EZ REF 103, HACKER'S GUIDE (vol 1 & 2), and HACKER'S HELPER (from Mel Ostler). From time to time we'll make references to these and N&B back issues. If you understand how to use PEEK, POKE, and CALL from BASIC, you are most likely ready to continue.

Since we all have SmartBASIC, we'll do most of our work from it. The first step is to get an idea of what REGISTERS are. In most situations you should just think of them as built-in variables. They don't use any standard RAM and they may contain any value from "0" thru "255". If you're accustomed to programming from BASIC, this may sound rather restrictive. Just keep in mind that everything you've seen on your ADAM was based on this simple concept. REGISTERS are the low level variables for the Z80 programmer! You can freely transfer values into and out of them. But, because there aren't many of them, you'll normally use them only as temporary variables.

Each of the registers has a specific name. To begin with we'll only work with seven of them; these are: "A", "B", "C", "D", "E", "H", and "L". The "A" register is also called the ACCUMULATOR. The others may be grouped into specific PAIRS in order to permit larger variable values. The acceptable pairs are "BC", "DE", and "HL".

In BASIC if you wanted to assign a value of "15" to a variable named "A", you'd use the following STATEMENT: 100 LET A = 15. There are NO LINE NUMBERS in Z80. The sequence of a program is determined by its location in RAM. In other words, your instructions are executed one after another beginning at the RAM address that you specify. In Z80 there is a single instruction which means "LET A ="; it is "62" in decimal or "3E" in hex. (Later we'll take a look at more powerful alternatives.) Thus, the Z80 equivalent of "LET A = 15" is "62,15" (we'll do most of our work in decimal since we all know the decimal system). This method of putting a value into a register is called IMMEDIATE ADDRESSING; the value loaded (LD) into the register is the next byte after the instruction. In the beginning, we'll do most of our work with IMMEDIATE ADDRESSING.

The "62" is called an OPCODE (operation code) or INSTRUCTION. Rather than think of the OPCODES are mere numbers, a system of mnemonics was devised. These mnemonics are used extensively by assemblers and they provide a reference point for you to "think" of the type of operation being performed. The operation of a "62" is to load the value in the next byte of RAM into the accumulator; the mnemonic is: LD A,15. In this example the "LD" is the OPCODE (or instruction). The "A,15" is called the OPERAND. The OPERAND represents the entity upon which the instruction is performed. This operand has two parts. Data is passed from the SOURCE (right of the comma) to the DESTINATION (left of the comma). The use of the mnemonics may seem a little complicated at first, but as you progess you'll understand them better and realize the importance of the concepts.

ADVANCED PROGRAMMING continued ...

As you can see, "62" designates both the OPCODE (LD) and the DESTINATION of the OPERAND (A,). For conservation of RAM and for speed of processing, many of the Z80 codes are based on this same principle. Now let's look at how to load values into the other registers with IMMEDIATE ADDRESSING.

```
LD A,   =   62,nn
LD B,   =   6,nn
LD C,   =   14,nn
LD D,   =   22,nn
LD E,   =   30,nn
LD H,   =   38,nn
LD L,   =   46,nn
```

Thus, to load a "27" into register "C", you'd POKE "14" and "27" into consecutive addresses (or bytes) in RAM. The mnemonic would be "LD C,27". Does this make sense to you? If so, you're already on your way to writing powerful Z80 programs.

The three register PAIRS are LoaDed a little differently. The purpose of the pairs is to expand the variable limit from "255" to "65535" -- what an increase in possibilities! These PAIRS are also called DATA POINTERS or ADDRESS REGISTERS; this is because the pairs are most often used to represent an address (or specific byte) of RAM. To use the technique, we divide the integer (or address) into two bytes -- one high order and one low order. We use "256" for the divisor.

Suppose we want to convert the value (or address) 17115 to a data pointer. We divide 17115 by 256 and keep the integer portion of the quotient; the answer is "66". To derive the other byte, we multipy "66" * "256" and subtract that product from 17115; the answer is "219". The "66" is the high order byte (it represents a number higher than face value; 66 * 256). The "219" is the low order byte. When using a data pointer, the low order byte is followed by the high order byte in RAM. For example, if we wanted to LoaD 17115 into the DE pair, our sequence would be: 17, 219, 66. "17" is the Z80 code for "LD DE,". The "66" is loaded into the "D" register and the "219" is loaded into the "E" register. This is important to note. In the "DE" pair, "D" is the high order register; in the "BC" pair, "B" is the high order register; in the "HL" pair, "H" is the high order register.

Below are the codes for loading the register PAIRs in IMMEDIATE ADDRESSING. Next month, we'll write a simple routine and explain the answers to the PROGRESS REPORT (quiz) in the next column.

```
LD BC,   =   1,lo,hi
LD DE,   =   17,lo,hi
LD HL,   =   33,lo,hi
```

PROGRESS REPORT

Be sure to send your answers with a COPY and an SASE. Don't just verbally answer. Even if the answers seem too simple (or too complicated), write them down and send them in. This is a vital part of the instructional process (both for you and for me).

1. Briefly describe the function of a register.

2. Are there line numbers in Z80 programming?

3. Can the "A" and "C" registers be combined into a PAIR?

4. What does the Z80 instruction "62" mean?

5. What is meant by IMMEDIATE ADDRESSING?

6. What is an OPERAND?

7. What does OP CODE stand for?

8. Write a simple Z80 routine using BASIC DATA and POKE statements which will load a "12" into the accumulator, load a "247" into the "C" register, and load a 65400 into the "HL" pair.

9. Convert the following to low/high order pairs. Show your calculations.

```
16292
65535
100
254
37269
```

10. Convert the following low/high order pairs back to integer addresses. Show your work.

```
47,56
145,17
157,0
0,132
76,182
```

EXTRA FOR EXPERTS

Write a routine from BASIC that will instantly (without clearing the screen) change the following TEXT colors: background to dark green, NORMAL to black letters on a light yellow screen, INVERSE to black letters on a light green screen.

HINTS: You'll use two EOS routines (#81 and #83; refer to page 8 of EZ REF 103). Study addresses 17045 thru 17065 and addresses 17100 thru 17135 of SmartBASIC 1.0 for example routines. Be sure to end your routine with a "201" (Z80 for RETurn). Set LOMEM to 28000 and POKE the routine into RAM starting at address 27600. To test the routine, POKE different color values into addresses 17059, 17115, and 17126; then execute a TEXT command and CALL your routine.

BEGINNING WITH GO-DOS
by Solomon Swift
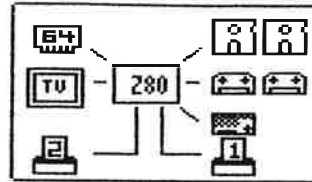
OVERVIEW

With GoDOS projected for completion by the end of June, there are still a lot of last minute changes. But, it looks like there will be between 400 and 500 built-in routines. This should provide greater utility and simplicity for the programmer. GoDOS should cut program development time significantly while also increasing the quality of the application ... and provide the simple user interface that's grown so popular on other systems. Already, several commercial software writers have expressed an interest in developing programs for the system.

SO MANY ROUTINES

One of the nice features of GoDOS is it's wide range of drive access. Upon the boot, it will be equipped to handle up to two tape drives, 10 disk drives (requires OrphanWare disk drive EPROMS), and a RAMdrive (automatically setup for the memory card installed). Most of the features are automatic; plus the user can preset some of them, such as the clock. He may choose an NMI (video interrupt clock), EVE clock, or OrphanWare clock with an update interrupt. The time will be displayed on the command line at the top of the screen.

Both the ADAM printer and a standard Epson/IBM compatible dot matrix printer are supported. GoDOS even comes with graphics print routines for a DMP. Print character, string, and control code routines are included with both ASCII print options.

The keyboard is used for normal input and the front game controller or a mouse is used for GoDOS commands. The user can set the speed of GC or mouse input. Keyboard input features a 22 key buffer or a standard one key acceptance.

The primary video routines include, register setup, read & write functions, fill functions, and it's all setup for hi-res mode for maximum versatility and use of color. Secondary graphics routines include print character and strings, programmer selectable typeface, 60 column fonts, pull down menus, dialog boxes, basic windowing, mobile icons, mobile sprites, SmartKEY label options (like Coleco software), screen scrolling (in four directions), clip art use, automatic circle routine (filled or empty), plot, and line routines. Plus hi-res shapes are supported with SCALEing and ROTating. More on the routines next month ...

SOFTWARE FEATURES

GoWRITER will be the first application program by DIGITAL EXPRESS. It features all the standard WP functions plus line justification, macros, SmartWriter compatibility, variable margins, and 30 or 60 column screen display. It has four basic print options. Standard ASCII is very similar to SmartWriter. Coded ASCII allows you to insert special DMP codes, such as WIDE, ELITE, true super and subscript. Page Zoning allows you to designate graphics areas for a page. With this option GoWRITER will print the text for the page and then allow you to re-insert the paper to print the hi-res (SmartPAINT or PowerPAINT) full screen graphics. Plus there is a simple graphic page design feature for those who have at least a 128K expander. You can layout (and preview onscreen) a page using various fonts and styles, clip art, and full screen graphics. You can even store the page for use with PowerPAINT. With all of the latest additions, GoWRITER will be going up five dollars in price effective September 1 ($29.95 retail; $24.95 to N&B subscribers).

PROGRAM EXPLANATIONS

by Solomon Swift

WE ♥ ADAM

NMI TUNE GENERATOR

Last month we LISTed a program that plays simple tunes while other operations are in progress, page 18. The music is updated via the NMI (non - maskable interrupt) from the video chip. The video chip services the routine 60 times per second. With a little experimentation, you can get a variety of sounds from one simple song table. Try these POKEs with the program as it was LISTed last month. Address 159 controls the FLASH speed or the secondary tempo, address 209 controls the primary tempo of a note, addresses 185 and 186 contain the pointer to the beginning of the song table.

159	185	209
1	80	4
1	90	4
2	94	4
2	96	2
1	60	2
1	70	1
1	10	1
8	10	8

GRAPHICS TEXT MODE

Page 17 LISTs a program that shows you how to use a simple graphics capability in TEXT mode. This is the same principle Coleco employed in some of their games. The basic idea is to redefine the INVERSE characters; turn them into graphics shapes which may be connected to form larger, more ornate designs.

When you RUN the program, you'll see "ADAM" displayed in giant letters and some words enclosed in a box at the bottom of the screen -- all in standard TEXT mode. This could add an interesting touch to your own programs.

Line numbers 106 through 400 contain the new bit image data for the inverse font shapes. Line numbers 102 and 104 POKE the routine into RAM that xfers the new values to VRAM. The new characters replace INVERSE "5" thru "x".

OKIMATE 20 COLOR TEST

The program at the bottom of page 18 is a simple demo for those who have the Okimate 20 with a color ribbon installed. I wrote the program primarily for the user to verify that the ribbon is positioned correctly. But, it does illustrate how to use 14 different colors on the printer. It is also included in the SwiftPRINT package.

PowerPAINT INIT SIZE

Although PowerPAINT is setup to handle any size drive, the INIT feature limits the directory size to three blocks. If you've got a lot of clip art or SmartPAINT files on a 720K disk, that 3K can be used up with a lot of actual disk space remaining. Due to user response, I've written a short patch that lets you INIT with a directory size of up to 9K -- 347 files! The program is LISTed on the top of page 19 of this issue. Be SURE to use it ONLY on a BACKUP of your PowerPAINT.

XRAM SIZE CHECK

"Big John" of OrphanWare has permitted me to release the latch port information for his BIG XRAM boards through N&B. A latch port, 66 (42h), is used to regulate the banking of the 64K pairs. This is how we turn 4 sets of 64K RAMs into a 256K RAM. We just send a value to the latch port to "tell it" which 64K pair to use next. For the first pair a "0" is sent OUT thru the latch port. For the 2nd; a "1" is sent ... for the 16th (as with a 1M card); a "15" is sent.

This simple concept is the basis for the larger RAMdrive programs for CP/M and EOS. First, though, we need to determine the size of the card installed. The program LISTed at the bottom of page 19 does this. The routine is very similar to the one we originated for use with MegaDISK 1.0 and GoDOS. RUN the program and it will tell you what size XRAM card you have (none, 64K, 128K, 192K, 256K, or 512K).

You may have noticed that your BIG XRAM card won't even be recognized as a 64K expander when you first turn on the system (with some of the older software). This happens with about 10% of the ADAMs. The minor problem is that the power surge put the latch port in an inderterminant state -- it can not even be recognized as a 64K card. If this happens to you, just execute any program that accesses a BIG XRAM card, such as the DEI or Walters ramdisks, or the CP/M test program, or the program on page 19. Also, you could send a value OUT to the latch port. For example, "62,0,211,66,201" as a simple routine would suffice.

```
10 REM GTM (GRAPHICS TEXT MODE)
12 REM a freeware contribution by DIGITAL EXPRESS
14 REM presented in Nibbles & Bits June 1988
16 REM May be traded freely. May not be sold commercially.
18 REM Do NOT remove these first FIVE REMark statements
100 LOMEM :36000: POKE 17059, 27: POKE 17115, 27: POKE 17126, 107: TEXT
101 PRINT " reading bit image data ..."
102 DATA 17,168,5,33,0,108,1,32,2,205,26,253,201
104 FOR x = 27600 TO 27612: READ mc: POKE x, mc: NEXT
106 DATA 255,0,0,255,0,0,0,0,0,0,0,0,255,0,0,255
107 DATA 9,9,9,9,9,9,9,9,144,144,144,144,144,144,144,144
108 DATA 255,128,128,159,144,144,144,144,144,144,144,144,159,128,128,255
109 DATA 255,1,1,249,9,9,9,9,9,9,9,9,249,1,1,255
110 DATA 0,32,96,160,0,0,0,0,124,130,186,162,186,130,124,0
120 DATA 60,66,185,165,185,173,66,60,255,255,255,255,255,255,255,255
130 DATA 0,0,0,0,15,15,31,31,63,63,127,127,1,0,0,0
140 DATA 0,0,0,0,255,255,255,255,0,0,0,0,192,192,224,224
150 DATA 240,240,248,248,252,252,254,254,255,255,255,255,207,207,135,135
160 DATA 255,255,255,255,254,254,252,252,135,3,3,3,1,1,0,0
170 DATA 0,0,1,1,3,3,7,7,15,15,31,31,63,63,127,127
180 DATA 255,255,192,192,128,128,0,0,255,255,0,0,0,0,0,0
190 DATA 255,255,3,3,1,1,0,0,0,0,0,0,240,252,254,254
200 DATA 255,255,255,255,255,128,128,128,255,255,255,255,255,3,1,1
205 DATA 128,128,128,128,128,128,128,128
210 DATA 1,1,1,1,1,1,1,1,128,128,128,128,128,128,128,255
220 DATA 1,1,1,1,1,1,3,255,127,127,63,63,31,31,15,15
230 DATA 7,7,3,3,1,1,0,0,254,254,252,252,248,248,240,240
240 DATA 224,224,192,192,128,128,0,0,0,0,129,129,195,195,231,231
250 DATA 0,0,0,0,3,3,7,7,15,48,96,224,224,224,224,224
260 DATA 254,15,7,3,0,0,0,0,112,56,12,7,1,0,0,0
270 DATA 0,0,0,0,224,120,28,14,7,7,7,7,7,6,12,248
280 DATA 0,0,0,0,192,224,240,127,199,237,112,112,48,48,48,48
290 DATA 48,48,48,48,48,48,48,48,192,224,112,112,48,48,48,48
300 DATA 48,49,49,49,49,49,48,48,192,128,128,128,128,129,255,126
310 DATA 63,96,192,0,0,0,14,112,224,48,24,24,24,24,24,24
320 DATA 24,24,24,24,24,56,120,126,32,32,48,48,126,48,48,48
330 DATA 48,48,48,48,48,48,50,28,24,24,24,24,24,24,24,24
340 DATA 0,0,0,0,0,1,7,254,0,3,14,24,48,48,96,96
350 DATA 192,192,192,192,192,192,192,192,96,96,48,48,24,14,3,0
360 DATA 255,255,0,0,0,0,0,0,0,0,0,0,0,0,255,255
370 DATA 0,192,112,24,12,12,6,6,3,3,3,3,3,3,3,3
380 DATA 6,6,12,12,24,112,192,0,0,0,0,0,252,254,14,6
390 DATA 0,251,85,81,81,81,0,0,0,0,128,128,192,192,224,224
400 DATA 255,255,255,255,254,254,252,240
499 DATA -1
500 st = 27648: tt = 0
510 READ mc: IF mc = -1 GOTO 530
520 POKE st, mc: st = st+1: tt = tt+mc: GOTO 510
530 IF st = 28192 AND tt = 49734 GOTO 2000
540 PRINT: PRINT " DATA entry error!!": END
```
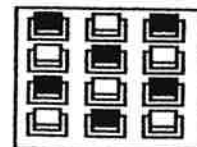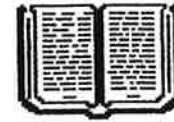
GTM program LIST continued ...

```
 2000 HOME: CALL 27600: INVERSE
 2010 HTAB 3: PRINT " ACCD ACCCN ACCD ACD ZCv "
 2020 HTAB 3: PRINT " B@FE B@OP@ B@FE B@E J@    "
 2030 HTAB 3: PRINT " IGH@w @QR@ IGH@w @@Y@@    "
 2040 HTAB 3: PRINT " J@@@E @ST@ J@@@E @U@W@    "
 2050 HTAB 3: PRINT "I@KLM@w@@@xI@KLM@w@V@x@    "
 2060 HTAB 3: PRINT "                          ": NORMAL
 2500 VTAB 12
 2510 INVERSE: HTAB 5: PRINT "95555555555555555555;"
 2520 HTAB 5: PRINT "8"; SPC(20); "7"
 2530 HTAB 5: PRINT "8"; SPC(20); "7"
 2540 HTAB 5: PRINT "8"; SPC(20); "7"
 2550 HTAB 5: PRINT ":6666666666666666666<"
 2560 NORMAL: VTAB 14: HTAB 8: PRINT "TEXT IN BOXES!!!";
 2570 VTAB 22: HTAB 1: END
 3000 REM enter GOTO 3000 to see the graphics vs. standard
 3010 FOR x = 53 TO 120: PRINT " "; CHR$(x); "  ";
 3020 INVERSE: PRINT CHR$(x): NORMAL: PRINT: NEXT


   10 REM Okimate 20 text color test
   11 REM a freeware contribution by DIGITAL EXPRESS
   12 REM do NOT remove these first five REMark statements
   13 REM June 1988
   14 REM may not be sold commercially
  100 c$ = CHR$(27)+CHR$(25): f$ = CHR$(141): FOR x = 1 TO 40
  110 k$ = k$+CHR$(219): NEXT: j$ = k$+"      This color is "
  200 DATA 245,219,64,203,71,40,250,241,211,64,201
  210 DATA 205,11,47,205,78,4,254,13,192,62,10,24,2
  220 DATA 62,0,195,78,4
  230 FOR x = 0 TO 28: READ mc: POKE x+1102, mc: NEXT
  240 POKE 16217, 89: POKE 16218, 4: REM make PR#2
  250 POKE 16219, 92: POKE 16220, 4: REM make pr#3
  260 PR #3: PRINT: PRINT: PR #0
  500 w$ = j$+"black.": GOSUB 10000: GOSUB 11000
  510 w$ = j$+"light green.": GOSUB 10020: GOSUB 11000
  520 w$ = j$+"medium green.": GOSUB 10010: GOSUB 11000
  530 w$ = j$+"dark green.": GOSUB 10110: GOSUB 11000
  540 w$ = j$+"cyan/aqua.": GOSUB 10060: GOSUB 11000
  550 w$ = j$+"medium blue.": GOSUB 10040: GOSUB 11000
  560 w$ = j$+"dark blue.": GOSUB 10030: GOSUB 11000
  570 w$ = j$+"light yellow.": GOSUB 10100: GOSUB 11000
  580 w$ = j$+"dark yellow.": GOSUB 10090: GOSUB 11000
  590 w$ = j$+"magenta.": GOSUB 10120: GOSUB 11000
  600 w$ = j$+"light red.": GOSUB 10080: GOSUB 11000
  610 w$ = j$+"medium red.": GOSUB 10070: GOSUB 11000
  620 w$ = j$+"dark red.": GOSUB 10050: GOSUB 11000
  630 PRINT: PRINT: PRINT: PRINT: END
10000 y = 1: r = 1: b = 1: RETURN: REM black
10010 y = 2: r = 0: b = 1: RETURN: REM medium green
10020 y = 3: r = 0: b = 1: RETURN: REM light green
10030 y = 0: r = 2: b = 2: RETURN: REM dark blue
10040 y = 0: r = 1: b = 3: RETURN: REM medium blue
10050 y = 1: r = 3: b = 0: RETURN: REM dark red
10060 y = 0: r = 0: b = 2: RETURN: REM cyan
10070 y = 3: r = 2: b = 0: RETURN: REM medium red
10080 y = 3: r = 1: b = 0: RETURN: REM light red
10090 y = 4: r = 0: b = 0: RETURN: REM dark yellow
10100 y = 2: r = 0: b = 0: RETURN: REM light yellow
10110 y = 1: r = 0: b = 3: RETURN: REM dark green
10120 y = 0: r = 2: b = 0: RETURN: REM magenta
11000 PR #3
11010 ON y+r+b = 0 GOTO 11050: PRINT c$;
11020 ON y = 0 GOTO 11025: PRINT w$; : y = y-1
11025 PRINT f$;
11030 ON r = 0 GOTO 11035: PRINT w$; : r = r-1
11035 PRINT f$;
11040 ON b = 0 GOTO 11045: PRINT w$; : b = b-1
11045 PRINT f$; : GOTO 11010
11050 PRINT: PRINT: PR #0: RETURN
```

```
  10 REM a public domain donation by DIGITAL EXPRESS
  11 REM presented in Nibbles & Bits June, 1988
  12 REM sets the PowerPAINT INIT directory size limit to 9K
 100 LOMEM :29000
 110 DATA 62,4,1,0,0,17,29,0,33,0,108,205,243,252,50,255,107,201
 120 FOR x = 27601 TO 27618: READ mc: POKE x, mc: NEXT
 130 dv$(1) = "TAPE ONE": dv$(2) = "DISK ONE"
 200 TEXT: PRINT: PRINT " This program sets the"
 210 PRINT " INIT directory size limit"
 220 PRINT " to 9K.  Great for 720K users."
 230 PRINT " Use ONLY on a BACKUP!": VTAB 16
 300 PRINT " Which drive for PowerPAINT?": PRINT
 310 PRINT " 1 = tape one": PRINT " 2 = disk one"
 320 GET k$: k% = VAL(k$): IF k% < 1 OR k% > 2 GOTO 350
 330 dv% = 2^(4-k%): GOTO 400
 350 TEXT: PRINT " end of program.": END
 400 HOME: PRINT " insert your PowerPAINT"
 410 PRINT " BACKUP into "; dv$(k%); " and"
 420 PRINT " press <RETURN> ..."
 430 GET go$: IF go$ <> CHR$(13) GOTO 350
 500 HOME: PRINT " verifying ..."
 510 POKE 27602, dv%: CALL 27601
 520 IF PEEK(27647) = 128 GOTO 530
 525 PRINT " read error on block 29.": END
 530 IF PEEK(28567) <> 58 GOTO 540
 535 PRINT " PowerPAINT already patched.": END
 540 IF PEEK(28566) = 62 AND PEEK(28568) = 50 GOTO 550
 545 PRINT " PowerPAINT not detected.": END
 550 IF PEEK(28567) <> 52 GOTO 545
 555 HOME: PRINT " correcting ..."
 560 POKE 28567, 58: POKE 27613, 246: CALL 27601
 670 IF PEEK(27647) = 0 GOTO 700
 680 PRINT " write error on block 29.": END
 700 HOME: PRINT " INIT dir size expanded!!!": END
```

```
  10 REM expansion RAM size test
  12 REM a freeware contribution by DIGITAL EXPRESS
  14 REM presented in Nibbles & Bits June 1988
  16 REM latch port design by John Lingrel and Tony Morehen
  18 REM may by traded freely but may NOT be sold commercially
  20 REM Won't hurt programs stored on DIGITAL EXPRESS ramdisk
 100 LOMEM :35000: POKE 16149, 255: POKE 16150, 255
4000 DATA 33,0,0,175,211,66,60,211,127,119,60,211,127,119,58,0,0
4010 DATA 183,32,10,62,255,50,95,253,62,1,211,127,201
4020 DATA 61,211,66,119,61,211,66,126,254,2,40,3
4030 DATA 175,24,233
4040 DATA 61,50,95,253
4050 DATA 58,95,253,60,14,66,237,121,62,2,211,127,50,0,0,58,0,0
4060 DATA 254,2,32,210,33,95,253,52,126,254,4,48,2,24,223,62,7,119,24,191
4499 DATA -1
4500 st = 135*256: tt = 0
4510 READ mc: IF mc = -1 GOTO 4530
4520 POKE st, mc: st = st+1: tt = tt+mc: GOTO 4510
4530 IF st = 34647 AND tt = 8659 GOTO 5000
4540 PRINT: PRINT " incorrect data entry!!": END
5000 TEXT: PRINT: PRINT " your system's expansion RAM": PRINT
5010 PRINT " is: ";
5020 CALL 34560: k = PEEK(64863)+1
5030 IF k = 256 THEN  PRINT "0 (no card detected)": END
5040 PRINT k*64; "KB": END
```

PROGRAM EXPLANATIONS continued ...

HOW TO USE 4-MAT

The program on the next page will format one to
four disk drives of any size at the same time. It
will also allow you to select the directory size.
When I first got my new disk drive EPROM from
OrphanWare, the first project I had in mind was
this multi-drive formatting program.

But I also did not want to just write "another"
disk formatter. My challenge was to write the
entire program in BASIC -- no machine code
routines at all. The program succeeded. The
trick is in understanding ADAMnet's use of DCB's
(Device Communication Blocks). Before we study
this information, though, let's get an overview
of 4-MAT.

It automatically determines if there is a disk in
one of the four drives. If a drive is occupied,
the disk will be formatted. To keep the program
simple, the only user input is to press the
<RETURN> key. Line numbers 100 thru 130 contain
the variables for setting up the drive. "vo%" is
for volume size (160, 320, or 720). "di%" is for
directory size (1 to 9). The variables are
dimensioned by actual drive code for ease of use.
"4" is for the first disk drive, "5" is for the
second disk drive, and so on.

Line numbers 140 thru 520 just setup for the main
part of the program. Rather than use Z80
routines, the program PEEKs and POKEs into the
disk drive DCBs. Line numbers 600 and 610
determine the location of the first disk drive
DCB (the others follow immediately). Line
numbers 620 thru 680 start the format for each
drive. Line numbers 690 thru 730 ascertain if
all the formatting is complete. Line numbers 750
thru 840 INIT each drive after the format (this
includes a check to accomodate the MegaDISK EOS
INIT patch). Line numbers 1000 and 1010 scan a
specified DCB to determine the "return code",
"dependent status", and "drive code".

DECODING THE DCB'S

ADAMnet reserves 21 bytes of RAM as a work buffer
for each of the DCB's. The following table
explains the meaning of each byte.

BYTE	PURPOSE
0	return code
1-2	I/O buffer pointer
3-4	buffer length
5-7	block number for I/O
7-8	unused
9	shared DCB flag
10-15	unused
16	device code
17-18	buffer length
19	device type
20	dependent status

The first byte, the return code, is for use by the
programmer. You may read it ascertain status, or
you may write to it to invoke a procedure. Put-
ting a "1" into the byte invokes a status check.
Putting a "2" resets the drive; putting a "3"
starts a write to the specified block; putting a
"4" starts a read from the specified block. After
putting a "1" into the first byte, the "return
code" and dependent status will be updated;
also, the accumulator and flag register will be
changed.

There are four common return codes after a status
is requested. "155" means that the drive is
inaccessable. "140" means that the keyboard is
waiting for input. "128" means that the device is
okay. "224" indicates a buffer length mismatch.

The dependent status is much more complex in that
bit encoding provides many more possiblities;
the dependent status is used chiefly for drives.
For disk drives it is best to shift the high
nibble to the low nibble. A "0" indicates that
the drive is operational and occupied. A "2"
indicates that a bad block error was just
encountered (either reading or writing). A "3"
means that the drive is operational and is not
occupied. A "4", for tape drives, signifies that
the the drive is not attached to ADAMnet. The
tape drives share a DCB; the tenth byte of the DCB
designates a shared DCB (1=shared, 0=indepen-
dent). In this event, the return code is always
"128". With the tape drives; the lower nibble of
the dependent status byte is for the first drive;
the upper nibble is for the second drive. By
reading the "return code" and "dependent
status", you can determine the I/O status of any
ADAMnet device. For the keyboard, printer, and
master 6801 a "1" is loaded into the 20TH byte;
otherwise it is a "0".

The EOS routines to read and write to drives use
the RETURN CODE byte and the BLOCK NUMBER bytes
to handle I/O. Put a "4" in the first byte and a
"0" in both byte five and six, and you initiate a
read of block zero for the specified drive.

```
 10 REM "4-MAT"
 11 REM a freeware contribution by DIGITAL EXPRESS
 12 REM formats up to four disks simultaneously
 13 REM no VERIFY::totally in BASIC
 14 REM do NOT remove these firest five program lines
 90 REM enter CALL 64605 to log drives onto ADAMnet
 92 REM vo%(x)=vol size, di%(x)=dir size, x=drive
 94 DIM vo%(7), di%(7): ONERR  GOTO 1100
100 vo%(4) = 160: di%(4) = 1
110 vo%(5) = 160: di%(5) = 1
120 vo%(6) = 160: di%(6) = 1
130 vo%(7) = 160: di%(7) = 1
140 POKE 23275, 6: POKE 23276, 7: REM setup 'alt dsk drv'
150 POKE 17115, 23: POKE 17059, 23: POKE 16149, 255: POKE 16150, 255
160 FOR x = 4 TO 7: vv% = vv%+vo%(x): NEXT: POKE 16953, 32
500 TEXT: PRINT " to FORMAT all occupied drives"
510 PRINT " press <RETURN> ...": GET k$: IF k$ = CHR$(13) GOTO 530
520 TEXT: PRINT " end of program.": POKE 16953, 95: END
530 dv = 65241
600 GOSUB 1000: IF d3% < 4 THEN  dv = dv+21: GOTO 600
610 ON d3% > 7 GOTO 520: HOME: PRINT " formatting ..."
620 dd = dv: gg = 0: FOR x = 0 TO 3: dv = dd+x*21: GOSUB 1000
630 IF d3% > 7 THEN  x = x-1: GOTO 655
635 POKE dv, 1: GOSUB 1000
640 IF d1%+d2% = 192 THEN  rr%(gg) = d3%: dd(gg) = dv: gg = gg+1
650 NEXT
655 x = gg-1
660 FOR y = 0 TO x: POKE dd(y)+2, 212: POKE dd(y)+4, 4
670 POKE dd(y)+5, 206: POKE dd(y)+6, 250
680 POKE dd(y), 3: NEXT: FOR td = 1 TO 1250: NEXT: ti = 0
690 VTAB 4: PRINT " time:": ff = 4: IF gg = 2 THEN  ff = gg
695 IF gg = 3 THEN  ff = 1.3
700 VTAB 4: HTAB 10: ti% = ti/ff: PRINT ti%
710 IF vv% = 640 AND ti% > 150 THEN  CALL 64605: GOTO 750
720 tt = 0: FOR y = 0 TO x: dv = dd(y): POKE dv, 1: GOSUB 1000
730 tt = tt+d1%: NEXT: IF tt <> (x+1)*128 THEN  ti = ti+1: GOTO 700
750 VTAB 1: PRINT " initializing disk(s) ..."
800 od = PEEK(16821): FOR y = 0 TO x: POKE 16821, rr%(y): zz% = rr%(y)
810 p1% = vo%(zz%)/256: p2% = vo%(zz%)-256*p1%: POKE 25308, di%(zz%)
820 POKE 25306, p1%: POKE 25305, p2%: ON PEEK(58603) <> 17 GOTO 840
830 POKE 58605, p1%: POKE 58604, p2%
840 PRINT CHR$(4); "init DEI-4mat": NEXT: GOTO 500
1000 FOR hh = 1 TO 200: NEXT hh
1010 d1% = PEEK(dv): d2% = PEEK(dv+20): d3% = PEEK(dv+16): RETURN
1100 er% = ERRNUM(0): CLRERR: PRINT
1110 PRINT " ERROR # "; er%: POKE 16953, 95: END
```
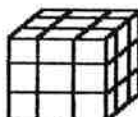
PRODUCT REVIEWS
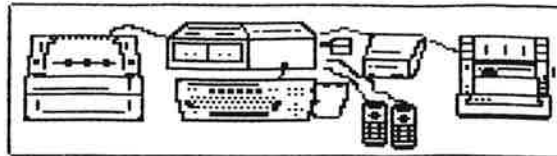
PRODUCT:	SpeedyWRITE
MANUFACTURER:	White Company
MEDIA TYPE:	disk/DDP
GRAPHICS/SOUND/DESIGN:	93;none;97
INSTRUCTIONS:	93
USEFULNESS vs. PRICE:	99
RECOMMENDATION:	HIGHLY RECOMMENDED
PRICE:	29.95
RATED BY:	Solomon Swift

As with many other computers, we have some very talented software developers in our corner who aren't even out of high school yet. Three who immediately come to mind for me are Ben Hinkle, Troy Bolin, and Bryan Payton. The original draft of SpeedyWRITE was written by David White when he was at the ripe, old age of 14. And, in my opinion his word processor is the best one ever written specifically for ADAM; it has many, many more features than SmartWRITER for example.

The program has more than 100 built-in features and commands. Some of the simple ones are just to enhance the user perspective. For instance, the program uses a 40 column screen; 24 lines per screen. You may select any of the 15 foreground and any of the 15 background colors for text. The available workspace size is shown on the screen. It can also tell you how many words are in a document. It makes use of user-defined macros. A "macro" is a time-saving feature that prints (displays) a string (several characters) for a single specified keypress. For example, you could press SHIFTed SmartKEY II to have a whole line of underscores print on the screen. Also, you can change character sets; a bold set of fonts is included. In an upcoming issue we'll LIST a program that converts FontPOWER fonts to SpeedyWRITE format. SpeedyWRITE includes a BASIC program that lets you design fonts too. And, it includes many other options that allow you to customize the program through "configuration" files.

One of the more advanced WP features is the ability to SEARCH and REPLACE forward or backward in the document. You can quickly move to the beginning or end of the document. You can scan through the document by word, sentence, or paragraph. You can DELETE a single character or any portion of the document. DELETEd sections are stored in a buffer which allows you to RECALL them or insert them in another part of the document. You can also split the screen to use part as a window for viewing one section of text while working on another. You can also insert a single space or a string of text.

You can use underlining, superscript, subscript, and bold for hardcopy enhancement. You can use variable margins. You justify text: left, right, full, center. You can also use tabs and auto indentation. You can use it with the standard ADAM printer or a dot matrix (by loading a CONFIG file). You can preset some special DMP control codes. You can preview a page before printing, number pages individually, and reprint a particular page. And you can do two column printing by changing margins and re-inserting a page. You can also use headers and footers. You can also choose any page to be printed.

You can convert SmartWriter files for use with SpeedyWRITE. You can store, retrieve, rename, lock, and delete files. You can also INIT tapes and disks.

I am very impressed with this program. And, there is also an enhanced version (2.0; costs $10 more) with several other features. For instance, 2.0 comes with an automatic RAMdrive -- 10K for a standard ADAM and 64K with an XRAM card installed. It includes more CONFIGuration files. It will INIT 320K and 720K disks correctly. It has online HELP screens. It has a "pocket database" feature that lets you store and retrieve notes as a screen of text. You can edit two files simultaneously. And there is a "column number" display next to the "bytes left" at the top of the screen. Plus, it includes a "wildcard" feature for deleting and copying files.

Truthfully, I could write several pages of review on this excellent word processor. I'd recommend it over ANY other WP currently available for ADAM. In the weeks to come we'll do the entire N&B newsletter with SpeedyWRITE, GoWRITER, and PowerPAINT. I like this program very much; but, it does have a couple of minor limitations. With so many features (I've only mentioned some of them), it can be a little confusing to use at first. And, there are no graphics as with SmartWriter. This detracts a little from the appearance, but graphics use a LOT of memory. Instead of graphics, you get a POWERHOUSE OF A WORD PROCESSOR. Get it today. You will most likely find that it becomes one of the most valuable additions you've ever made to your ADAM!!

```
PRODUCT:                          HACKER'S HELPER
MANUFACTURER:                      Mel Ostler
MEDIA TYPE:                           book
GRAPHICS/SOUND/DESIGN:            n/a;n/a;94
INSTRUCTIONS:                          n/a
USEFULNESS vs. PRICE:                   94
RECOMMENDATION:            highly recommended
PRICE:                               18.00
RATED BY:                    Solomon Swift
```

The HACKER'S HELPER is a 175 page book (you use your own binder) for the beginning to intermediate level Z80 ADAM programmer. The book includes a lot of information on Z80 fundamentals including the HEX and BINARY number systems.   It also includes the entire Z80 instruction set listed alphabetically and numerically.

The primary purpose is to familiarize the programmer with machine code programming on ADAM with an emphasis on using routines. Many of the EOS routines are fully disassembled and explained; this gives you an idea of how to create your own programming routines.

Overall the book provides an excellent source of learning about the more advanced aspects of ADAM. Concepts are explained in very easy to understand terms. The six chapters are: THE Z80 INSTRUCTIONS, DISASSEMBLY & ASSEMBLY SYSTEMS, EOS DISASSEMBLIES, SERIALIZED DISASSEMBLIES, HELPFUL NOTES (basic machine code concepts), and SOMETHING PERSONAL (application of concepts presented).

HACKER'S HELPER is available from Mel Ostler for $18 plus $3 for S/H: 7641 Raasaf Boulevard, Las Cruces, NM 88005.

```
PRODUCT:               CREATIVE GRAPHIC & ANIMATION #1
MANUFACTURER:              Super Charged Programs
MEDIA TYPE:                       disk/DDP
GRAPHICS/SOUND/DESIGN:            71;n/a;79
INSTRUCTIONS:                          82
USEFULNESS vs. PRICE:                   75
RECOMMENDATION:            not recommended
PRICE:                               24.95
RATED BY:                    Solomon Swift
```

Each month we get software for review and/or possible addition to our product list. Over the past couple of years I've seen, used, and commented on hundreds of programs ranging from commercial packages to public domain contributions. It is rare when I am this disappointed with a package; the programs themselves within this package are fairly well written, however. The problem arises from the fact that the author tries to get ADAM to do something that is just not suited for the system or any BASIC interpreter.

The sales ad read "... only program we know of that brings out true animation and puts it into your hands to use with ease. This is what the ADAM COMPUTER was designed to do". Accepting this accolade as fact (or at least something close), I eagerly awaited its arrival. Within a week of placing the order it arrived (M.W. Ruth, Company); I thumbed through the manual first. It was nicely put together (and included some good graphics). Then I inserted the disk and followed the instructions in the manual. I was shocked to find the author using large, detailed, SLOW hi-res shapes for awkward animation and rotation. By DRAWing, XDRAWing, and ROTating he managed to clumsily push the shapes across the screen destroying the background designs by erasure and color bleeding. The entire package is based on this same principle -- using BASIC hi-res shapes in a manner that can, at best, be described as very poor. But, the author is consoling; he's also working on a similar program for the IBM which he claims will work better than the ADAM version.

I think that any ADAM owner would be disappointed with the package too. I regret that I spent money for it. By LISTing the programs one can discern that the author did put a lot of work into the package. But, for colorful, smooth, fast animation on ADAM (and almost any computer) sprites or some other bit-mapped technique must be used. BASIC hi-res shapes are just too slow, too awkward, and they cause color bleeding and erasure problems.

NEW PRODUCTS

NEW COMMERCIAL SOFTWARE

SpeedyWRITE 1.0: Simply the most advanced word processor ever developed specifically for ADAM -- written in fast Z80 code. More than 100 fetures including 40 column screen, all screen colors, underline, bold, super & subscript, split screen, line justification, keyboard macros, configuration options and a full supply of file handling utilities, plus lots more. $29.95 on disk or data pack.   (WHITE COMPANY)

SpeedyWRITE 2.0: All of the above plus: INIT support for any disk drive size, ability to edit two files simultaneously, pocket database, already setup for dot matrix or ADAM printer, built-in ramdisk (10K for standard ADAM and 64K with memory expander). Just $39.95 on disk or data pack.

PICTURE 1.2: great graphics program; move/copy; lines, circles, ellipses, magnify, no printing (but can easily be converted for ShowOFF I or PowerPAINT). Full screen or standard HGR screen drawing. Only $9.95 on disk or data pack. (TLB SOFTWARE)

PowerPRINTS: 15 full screen pictures for use with PowerPAINT; most designed by professional artists just for ADAM. $11.95 on disk or data pack. (WIZARD'S LAIR)

CLIP ART (1 & 2): Each volume has more than 40 clip art pictures for use with CLIPPER, PowerPAINT, or GoWRITER. Most are designed by the two commercial artists at WIZARD'S LAIR. $11.95 each on disk or data pack.

SwiftDISK: Fools the operating system into believing that the super fast ramdisk is a second tape drive. Great for SmartWRITER, ADAMcalc, SmartBASIC, SmartLOGO, and many others. Requires MegaDISK 1.0 and at least a 64K card (works best with 128K or larger card). $9.95 on disk or data pack. (DIGITAL EXPRESS).

PaintAIDE: Allows you to customize some aspects of PowerPAINT and fixes the minor bugs with the early versions. Let's you preset the SPECIAL typefaces. Plus it comes with over THREE DOZEN font files which really brings out the page design features of PowerPAINT. Includes some BASIC programs too. $16.95 on disk or data pack. (DIGITAL EXPRESS).

Mr. T-SEARCH: Great word search puzzle maker. Five size options. Nice hardcopy (ADAM or dot matrix). Packed with nice features. $12.95 on disk or data pack. (Mr. T. SOFTWARE)

PHRASE CRAZE: Colorful graphics; good sound; two or three players; "Wheel of Fortune" type game; very realistic. $18.95 on disk or data pack. (REEDY SOFTWARE).

GAME (I and II): Each set is two volumes (14 songs with pictures); good entertainment; great for recording as video tape headers. $11.95 per set on disk or data pack. (DIGITAL EXPRESS)

SwiftPRINT: Powerful graphics file interchange program (RLE, SmartPAINT, GraphixPAINTER, and Paint-MASTER). A variety of picture print functions including COLOR for Okimate 20 owners. $14.95 on disk or DDP (DIGITAL EXPRESS)

SEARCHset (1 & 2): preset word lists for use with Mr. T-SEARCH. $8.95 each on disk or DDP (DIGITAL EXPRESS)

SmartTALK: multi-featured speech program with graphics and sound. For use with Eve SS/CC or TALKER by OrphanWare. $19.95 each on disk or DDP. (DIGITAL EXPRESS).

PD SOFTWARE

N&Bpix 19, 20, 21, & 22
PaintMATES 04 & 05
PaintFORMS 03
Astrology (by Ruth Mather -- great graphics)
PrintPATCH (DMP patches for several Strategic Software packages)
Z80 PROGRAMMER (1 & 2) requires CP/M 2.2
Guy's Games (self-booting by Guy Cousineau)
Guy's Utils (large variety by Guy Cousineau)
Media Editor (three great media editor utilities)
Bowling Diary (by Hector Sanchez)
ADAM FB Analyzer (by Hector Sanchez)

COLECO PRODUCTS

"ADAMlink modem" just $29.95
"Smart Letters & Forms" just $10 on DDP or disk
"Richard Scarry Word Book" just $10 on DDP
"Super Zaxxon" just $9.95 on DDP
"Super Action Controllers" with Baseball cart just $39
"Roller Controller" with Slither cart just $29
"Steering Module" with Turbo just $39
"Two Black Controllers" just $5.95

ASSORTED ITEMS

"floppy disk mailers" just 39 cents each
"Versa-Paks™" $1.50 each -- holds five 5.25" disks (blue or tan)
"Teak wood rolltop disk storage unit" holds 70 5.25" disks just $17.95
"Printer power supply" just $14.95 each
"TV/computer switch box" just $2.95 each
"RED or BLUE Panasonic ribbons" just $5.95 each
"Black Okimate 10/20 ribbons" just $4.95 each
"Color Okimate 20 ribbons" just $5.95 each
"Nashua Disks" DS/DD; 10 per box; just $6.45
"EOS7 DISASSEMBLY" by George Havach just $1.95 each
"TYVEK™ SLEEVES" just 5 cents each
"Paper disk sleeves" just 3 cents each
"PICTORAL GRAPHICS LIBRARY" by DIGITAL EXPRESS; 100+ pages; nicely bound; complete hardcopies of the PD graphics for PowerPAINT; arranged by size (screen, letterhead, workspace, clip art, sprites, fonts, and paint brushes) -- get the most out of PowerPAINT by knowing what's already available (and exactly where to find it); just $14.95 to N&B subscribers

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) $19.95 (retail) $14.95 (SDP)
a set of 10 excellent programming aides; 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 randisk ability with BASIC 1.0; corrects several BASIC bugs; includes TurboCOPY -- very nice media control
and copy utility; requires 64K expander

▢▢▢ 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 randisk 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 randisk 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; self-booting or can
be BRUN after BASIC

▢▢▢ 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 randisk 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), EZfileXFR2 (faster than EZfileXFER, by not
restarting the directory after each transfer)

▢▢▢ AUTOWRITER   (by Mr. T. SOFTWARE) $15.00 (retail) $14.25 (SDP)
a menu driven utility that writes machine code routines and BASIC subroutines (included) of your choice to a user
designated data pack or disk; file may then be merged with existing programs to add special features; detailed
instruction manual

DOT MATRIX PRINTER SOFTWARE

▢▢▢ 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 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 printers and the Okimate 20; does NOT include line justification commands or
internal document margin control; requires at least a 64K expander

▢▢▢ Fast & Calc Patch   (by ORPHANWARE) $9.95 (retail) $8.95 (SDP)
FastPatch 2.0 directs all printer output to your parallel interfaced printer -- can be used with SmartBASIC 1.0,
SmartWriter, and SmartFiler; CalcPatch directs ADAMcalc output to your dot matrix printer; neither patch includes
special printer commands -- works just like the standard ADAM versions

▢▢▢ LinkPatch   (by ORPHANWARE) $9.95 (retail) $8.95 (SDP)
ADAMlink II telecommunications software with up and down loading of ASCII files; plus directs printer output to your
dot matrix

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

☐☐☐ 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

☐☐☐ 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

☐☐☐ Diablo   (by IMAGE MICROCORP) $19.95 (retail) $18.95 (SDP)
* a maze-like game in which the play field consists of user movable tracks on which you try to keep a ball in motion; good graphics; requires substantial strategy to play

☐☐☐ Black Gold   (by IMAGE MICROCORP) $19.95 (retail) $18.95 (SDP)
* a board style game for one to four players; compete by digging for oil; good graphics

☐☐☐ Stock Market Game   (by IMAGE MICROCORP) $19.95 (retail) $18.95 (SDP)
* a board style game for 1 to 4 players; see who makes the biggest profit buying and selling stock; a relatively good tool for learning about the stock market; more enjoyable with some stock market understanding

☐☐☐ Centipede   (by AtariSOFT) $12.95 (retail) $11.95 (SDP)
* the still popular arcade game in which you shoot away segments of oncoming centipedes; available in cartridge ONLY; one or two players

☐☐☐ Defender   (by AtariSOFT) $12.95 (retail) $11.95 (SDP)
* the action packed arcade game in which you shoot attacking alien ships and attempt to save inhabitants of the planet below; available on cartridge PLUS disk or data pack (specify which one you want with the cartridge); one or two players

☐☐☐ Beyond Trek   (by Digital Express) $19.95 (retail) $14.95 (SDP)
* pits you against hostile klingons; very good graphics; good sound/music; protect 4 starbases and annihilate the klingons; you command the Enterprise; hall of fame for 10 high scores (for session or all-time); requires at least a 64K expander

☐☐☐ Chess Champ   (by Digital Express) $19.95 (retail) $14.95 (SDP)
* the FIRST graphic chess game for the ADAM; great graphics; easy user interface; 10 skill levels; a little slow on higher skill levels; good chess playing companion; take back last move; edit board; on-line instructional; store/load up to 52 games per disk or data pack; requires at least a 64K expander

COLECO COPYRIGHTED SOFTWARE

☐☐☐ SmartLOGO   (data pack only) $18.95 (retail) $15.00 (SDP)
* Coleco's version of the popular structured language; good for graphics and sound control; 350+ page manual

☐☐☐ SmartFILER   (data pack only) $12.95 (retail) $10.00 (SDP)
* Coleco's general purpose database program; easy electronic filing system; search features; 38 page manual

☐☐☐ ADAMcalc   (data pack only) $18.95 (retail) $15.00 (SDP)
* advanced electronic spreadsheet; comes with sample templates; 154 page manual

☐☐☐ CP/M 2.2   (data pack only) $26.95 (retail) $25.00 (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) $11.95 (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) $11.95 (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) $3.95 (SDP)
* 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) $3.95 (retail) $2.95 (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; 21 pages; holes drilled for easy binder insertion

□□□ Pinball/HardHat Guide $3.95 (retail) $2.95 (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) $29.95 (retail) $24.95 (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) $29.95 (retail) $24.95 (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   *set06: all the programs from 10/87, 11/87, & 03/88
*set07: all the programs from 4/88 thru 6/88

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)

□□□ 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; fonts can be used in your own BASIC 1.0,
BASIC 2.0, and z80 programs

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

□□□ PowerPAINT   (by DIGITAL EXPRESS) $44.95 (retail) $34.95 (SDP)
* 80K machine code graphics processor for ADAM; the most extensive graphics design program available; uses
Coleco-like graphics; a large variety of file storage and retrieval options (directly loads PaintMASTER,
SmartPAINT, GraphixPAINTER, SmartLOGO, and RLE pictures); quick global color changes; move, copy, and erase
options; many hardcopy print options (screen, labels, letterheads, and whole picture); screen scroll options;
four screen pictures with 64K card (8 screen picture with 256K or 512K expander); uses FontPOWER font sets,
CLIPPER clip art, and SpritePOWER sprites; requires at least a 64K memory expander; requires a Centronics
parallel interfaced Epson FX or IBM 5152 compatible dot matrix printer for hardcopies; fully compatible with
SmartPAINT; you can easily UNDO changes

MISCELLANEOUS SUPPLIES

�🄳🄳🄳 Coleco/LORAN digital data packs $29.95 (retail--for 10) $3.95 (retail--each)
                                         $24.95 (SDP--for 10) $2.95 (SDP--each)
* designed and formatted by Loranger Manufacturing; no face label

�🄳🄳🄳 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; no face label

�🄳🄳🄳 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

�🄳🄳🄳 printer ribbons for SmartWRITER printer $15.95 (retail--for 3) $5.75 (retail--each)
                                              $14.45 (SDP--for 3) $4.95 (SDP--each)
* black ink; standard replacement ribbon cartridge

�🄳🄳🄳 Panasonic printer ribbon $5.45 (retail--each)
                                         $4.95 (SDP--each)
* black ink; nylon; standard replacement ribbon for 1080, 1080i, 1090, 1091, 1091i, and 1092

�🄳🄳🄳 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 15/16"; fan fold; single column

�🄳🄳🄳 multipurpose adhesive labels $9.95 (retail--for 1000) $6.95 (retail--for 500)
                                         $7.95 (SDP--for 1000) $4.95 (SDP--for 500)
* white, pin-feed, 4" by 1 7/16"; fan fold; single column

ᴏ🄳🄳🄳 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

EDUCATIONAL SOFTWARE

ᴏ🄳🄳🄳 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

ᴏ🄳🄳🄳 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

HOME/BUSINESS SOFTWARE

ᴏ🄳🄳🄳 SoftPACK I   (by E&T SOFTWARE) $18.95 (retail) $18.45 (SDP)
* four menu driven home management programs; SoftCHECK, Checkbook Totalizer, CheckBook Reconciler, and SoftMailer (address filer for labels and envelopes)

ᴏ🄳🄳🄳 Business Pack I   (by E&T SOFTWARE) $18.95 (retail) $18.45 (SDP)
* two useful programs for creating and printing address files; plus two very good programs for inventory control and printing

Public Domain Software Info

Public domain software is offered as a quick, inexpensive means for you 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).

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 $3.00 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 120K 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.

GRAPHICS FILES LIBRARY

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

N&Bpix (volumes 001 thru 022): 13 screen pictures each.
Art Gallery (volumes 1 & 2, compiled by REEDY SOFTWARE): 13 screen pix each.
PaintMATES (vol 1 - 5): small art for use with PowerPAINT (fonts, sprites, clip art, & brushes).
PaintFORMS (vol 1 - 3): one full page graphic, 3 letterheads, & 1 label for use with PowerPAINT.
PixManII: switch pictures between RLE, SmartPAINT and PaintMASTER formats; includes SW docs.

CP/M 2.2 LIBRARY

CP/Mgames (volumes 1 & 2): assorted BBASIC (included) games.
demo carts: requires 64K XRAM card; music samples, system tester, much more.
CP/Mutil01: a variety of utility .COM files for CP/M.
Z80programmer (vols 1 & 2): assorted utilities for advanced programmers.

MISCELLANEOUS COLLECTIONS LIBRARY

MWplus01: a collection of improvements to MultiWrite (required); by Jim Guenzel.
N&Bacalc01: several paradigm and other files; 148K; by Terry Fowler.
EZpak: self-booting medium; contains EZmenu & EZcopy.
ezFILER: self-booting medium; contains nice BASIC address filer.
SHAPEMAKER: several font shape tables; nice shape design utility; by Guy Cousineau.
N&Blogo01: a variety of SmartLOGO (required) files.
One Minute Formatter: 1 or 2 drives, single or double sided, same time, plus more.
MusicBOX (vol 1 & 2): 10 SmartTUNES songs each, plus instructions, and more.
Guy's Games: self-booting collection of graphic, thinking games.
Guy's Misc. Utils: assorted BASIC utilities by Guy Cousineau.
Bowling Diary: self-booting database for tracking bowling performance; by Hector Sanchez.
ADAM FB Analyzer: helps pick winners with NFL score tracking; by Hector Sanchez.
MediaMATE: Includes media editors by D.L. Ewing, Brett Lynn, and Guy Cousineau.

CLIP ART
from: PaintMATES@4