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**Problems with spaces in BASIC, detecting modes of operation, and comments about our format**

as follows: 1 off, 2 on, 3 and 4 off, 5-7 optional, 8 off.

## Pen Pal Wanted

I like computers a lot. I would like to have pen friends who are interested in computers. I know BASIC and machine language. If you would like me as a pen friend, write to the following address.

XAVIER JOHN  
P.O. BOX 838  
BOROKO, N.C.D.  
PAPUA, NEW GUINEA  
(via) AUSTRALIA

## XOR or X OR?

When I run *Fraction Practice II* (November 1987) on my 128, I get a syntax error in line 150. What gives?

JOHN E. POTTER  
NEW LEXINGTON, OH

The program line in question reads like this.

```
150 A=FNC(Z1):IFA=XORA=Y
    THEN150
```

This is a classic example of a problem often encountered when programming in Commodore BASIC. Because the operating system doesn't strictly require spaces between commands, keywords, or variables, many programmers like to save time and space by running everything together. To a human, it's obvious that when spaces are added, the line is meant to be read as follows.

```
150 A=FNC(Z1):IF A=X OR A=Y
    THEN 150
```

The 128, however, has an XOR command. When the interpreter looks at the same line, the first part of the code presents no problem. The problem occurs when it tries to execute the IF statement. It reads it this way.

```
IF A=XOR A=Y THEN 150
```

The syntax of the XOR func-

tion is XOR(n1,n2). So the computer interpretation balks not only at the fact that there are two comparisons run together (A=XOR and A=Y) but also because the XOR function has no arguments. This is where the syntax error comes from.

Another common syntax error comes from using an AND comparison after the variable T and running the two together. The computer misinterprets the code as a TAN function. The specific solution to this problem, then, is to enter the line as a human would read it—with spaces. The way to avoid similar problems cropping up in your own code is to take the time to separate the components of a program instruction with spaces. It may save you a lot of debugging time later.

## Mode Detection

I am writing a text adventure game that is supposed to work in both 128 mode and 64 mode. How can I check to see if a 128 is running in 64 or 128 mode and if it's in 40- or 80-column mode? Then, how can I make the program switch automatically to 40- or 80-column mode?

HENRY WILLIAMS  
COALDALE, AB  
CANADA

There's a difference between the 64 and the 128 in the way system memory is laid out. This fact can be utilized to determine which mode a program is running in. Some programmers will simply poke a value into the memory range from 16384 (\$4000) to 40959 (\$9FFF) and try to read it back. Since this is an area of free RAM in 64 mode but it's overlaid with BASIC ROM in 128 mode, the test is whether or not the value being poked can be peeked again. The following code fragment utilizes this principle.

```
10 V=PEEK(40000):POKE
    40000,V+1:PRINT 64*(V-
    PEEK(40000)+2)“MODE”
```

If you don't want to take chances with BASIC RAM memory, use the fact that the contents of the zero page vary between modes. For example, on both the 64 and the 128, addresses 768 and 769 form a vector to the BASIC error-handling routine. On the 64, the address being vectored is 58251 (\$E38B), but on the 128, the address is 19910 (\$4DC6). Peeking the address carried within this vector will tell your program what mode is being used.

To check whether your 128 is using 40- or 80-column mode, peek address 215, the active screen flag. Try this.

```
10 IF PEEK(215) AND 128 THEN
    PRINT “80-COLUMN MODE”:
    ELSE PRINT “40-COLUMN MODE”
```

To switch between 40- and 80-column screens, use the following line.

```
PRINT CHR$(27)“X”
```

Printing CHR\$(27) is like pressing the Esc key.

## Format Feedback

I appreciate the present Gazette format because it gives me information about other computers and their applications. I am 70 years old, and I use a 64; my grandchildren use IBM computers.

HUGH F. SAUTTER  
PERRYSBURG, OH

I am disappointed in your “replacement” magazine. Good-bye, Gazette. It was sure fun while it lasted.

DOYLE R. PAYNE  
BILOXI, MS

Write to Gazette Feedback, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. □

AN UPDATED GUIDE TO

# COMMODORE USER GROUPS

EDITED BY DANA STOLL



Last August and September, we published a two-part list of Commodore user groups across the United States, Canada, and the rest of the world. Since then, we have updated our list, adding more than 90 additional groups. Under each state heading, the groups are listed according to ZIP code.

User groups offer Commodore 64 and 128 owners a great deal of support and information. If there is a group near you, we hardly recommend that you attend a meeting and offer your support in return.

If your group was not listed last summer and it does not appear in this update, send your club name, address, and bulletin board telephone number (if available) to this address.

Commodore 64/128 User Group  
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Your group will be listed in an update in a future issue.

## ALABAMA

**H.A.C.K.S.**, P.O. Box 14356, Huntsville, AL 35815 (BBS#s 205-859-9316 for 300-1200 baud, and 205-851-9827 for 1200-2400 baud)

**Coosa Valley Commodore Club (C.V.C.C.)**, P.O. Box 1893, Gadsden, AL 35902-1893

**Amiga/Commodore Club of Mobile**, 3868-H Rue Maison, Mobile, AL 36608

## ARIZONA

**Commodore Club South**, P.O. Box 324, Pinson, AZ 85126

**Thunder Mountain User's Group**, P.O. Box 1796, Sierra Vista, AZ 85636

**Catalina Commodore Computer Club**, P.O. Box 32548, Tucson, AZ 85751

## ARKANSAS

**Pine Bluff Users Group (PBUG)**, P.O. Box 1083, Pine Bluff, AR 71613 (BBS# 501-536-5915)

**Commodore Computer Club**, P.O. Box 6000, Fort Smith, AR 72906

## CALIFORNIA

**Commodore 64 West User Group**, 2306 W. 180 St., Torrance, CA 90504

**Southern California Commodore Users Group (SCUG)**, 11018 E. Rosecrans Ave., Ste. 203, Norwalk, CA 90650 (BBS# 213-927-5016)

**Los Angeles County Commodore Club**, 5947 Reno Ave., Temple City, CA 91780

**K-North**, 1616 Wagon Wheel Dr., Ocean-side, CA 92057

**Commodore Users Group of Riverside (CUGR)**, P.O. Box 8085, Riverside, CA 92515

**FOG International User's Group**, P.O. Box 3474, Costa Mesa, CA 92628 (Postal group)

**North Orange County Computer Club**,

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**Fairfield Commodore User's Group**, P.O. Box 2778, Fairfield, CA 94533

**North Bay User's Group**, P.O. Box 7156, Vallejo, CA 94590

**Lake County Computer Users**, P.O. Box 385, Clearlake, CA 95422

## COLORADO

**Fort Collins C2**, P.O. Box 2051, Ft. Collins, CO 80522

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**Stamford Area Commodore Society**, P.O. Box 2122, Stamford, CT 06906

## FLORIDA

**Commodore Computer Club**, 6956 Maudin Ln., Jacksonville, FL 32244

**Fort Walton Beach Commodore Users Group (FWBCUG)**, P.O. Box 3, Shalimar, FL 32579 (BBS#s 904-862-8229 for 300-1200 baud and 904-862-8830 for 2400-9600 baud)

**El-Shift-Oh Commodore User's Group**, P.O. Box 361348, Melbourne, FL 32836-1348

**Big One Group**, Erick Rodriguez, 4271 NW S-TAM CNL Dr. 205, Miami, FL 33126

**M.I.C.E.**, 11110 Bird Rd., Miami, FL 33165

**Tampa Commodore Users Group**, P.O. Box 271471, Tampa, FL 33688

**Charlotte County Commodore Club (CCCC)**, P.O. Box 512103, Punta Gorda, FL 33951-2103

**Commodore User Group of Venice**, P.O. Box 3325, Venice, FL 34293

**Commodore Country Club**, 9125 U.S. 19 N, Pinellas Park, FL 34666

**Lake/Sumter Commodore Users Group**, P.O. Box 416, Leesburg, FL 34749

## ILLINOIS

**U.N.C.L.E.**, 533 N. 4th Ave., Des Plaines, IL 60016

**Fox Valley 64 User Group**, 833 Prospect, Elgin, IL 60120

**S.W.R.A.P. User's Group**, P.O. Box 342, Bedford Park, IL 60449

**Peoria Area Commodore Users Group (PACUG)**, 2508 N. Rockwood Rd., Peoria, IL 61604-2216

**Decatur Commodore Computer Club**, P.O. Box 2752, Decatur, IL 62526-2752

**Jacksonville Area Commodore Users**, 4 Purcell St., P.O. Box 135, Murrayville, IL 62668

## INDIANA

**Anderson Computer User's Group**, 830 Harold St., Anderson, IN 46013

**C\*H\*U\*G BBS and Club (Commodore Hardware Users Group)**, P.O. Box 40745, Indianapolis, IN 46240

## IOWA

**Product Engineering Center Commodore Users**, 319 Ivanhoe Rd., Waterloo, IA 50701

**Cedar Valley Commodore User's Group**, P.O. Box 2254, Waterloo, IA 50704

**Clinton Commodore User's Group**, P.O. Box 743, Clinton, IA 52732

## KANSAS

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## LOUISIANA

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## MARYLAND

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**Columbia Commodore User Group**, 455 Joetta Dr., Elkridge, MD 21227

**Westinghouse Commodore User's Group**, P.O. Box 8756, Baltimore, MD 21240

**Hagerstown User's Group**, 953 W. Washington St., Hagerstown, MD 21740

## MASSACHUSETTS

**Worcester Area Com-Rades**, 35 Hilltop Ave., Jefferson, MA 01522

## MICHIGAN

**Commodore Operators of Marysville/Pt. Huron**, 4579 Lake Shore Rd., Fort Gratoite Tpk., Pt. Huron, MI 48060

**Computer Users of Lexington**, P.O. Box 482, Lexington, MI 48450-0482

**Lansing Area Commodore Club**, P.O. Box 1065, E. Lansing, MI 48826 (BBS# 517-339-0818)

**Lenawee Commodore User's Group**, 210 Chestnut St., Adrian, MI 49221

**West Michigan Commodore Users Group (WMCUG)**, 1334 Riley, Hudsonville, MI 49426

## MONTANA

**Missoula Commodore User's Group**, P.O. Box 331, Missoula, MT 59806

## NEBRASKA

**Lincoln Commodore User's Group**, 5742 Saylor, Lincoln, NE 68124

**Alliance Commodore Computer Club**, 607 Toluca, Alliance, NE 69301

**Panhandle Computer User Group**, 1122 Ave. L, Scottsbluff, NE 69361 (BBS# 308-635-7244 and TDD# 308-635-7244)

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**Morrisonville Commodore User's Group**, Rt. 1, Box 61, Morrisonville, NY 12962

**Triple Cities Commodore Society**, P.O. Box 476, Binghamton, NY 13902

## NORTH CAROLINA

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**Greater Onslow Commodore Users Group (GOCUG)**, P.O. Box 1644, Jacksonville, NC 28541

## OHIO

**Commodore Computer Club of Toledo**, P.O. Box 8909, Toledo, OH 43623

**COM-NET**, c/o Gladys Reinhardt, P.O. Box



390, Woodfield, OH 43793 (BBS# 708-433-8287)

## OKLAHOMA

**Stillwater Computer Society**, 3124 N. Lincoln, Stillwater, OK 74075

## OREGON

**The Computer Group**, P.O. Box 22233, Eugene, OR 97402

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**Beaver County Area Commodore User's Group**, P.O. Box 412, New Brighton, PA 15066

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**Commodore Users of Lebanon County**, P.O. Box 511, Richland, PA 17087

**West Branch Commodore Users Group**, 1111 Franklin St., Williamsport, PA 17701

**Lower Bucks User Group**, P.O. Box 397, Croydon, PA 19020-0959 (BBS# 215-788-8430)

## SOUTH DAKOTA

**Sioux Empire Commodore Club**, 406 W. 6th, Yankton, SD 57078

## TENNESSEE

**Memphis Commodore User's Club**, P.O. Box 34095, Memphis, TN 38134

## TEXAS

**Longview Computer User's Group**, P.O.

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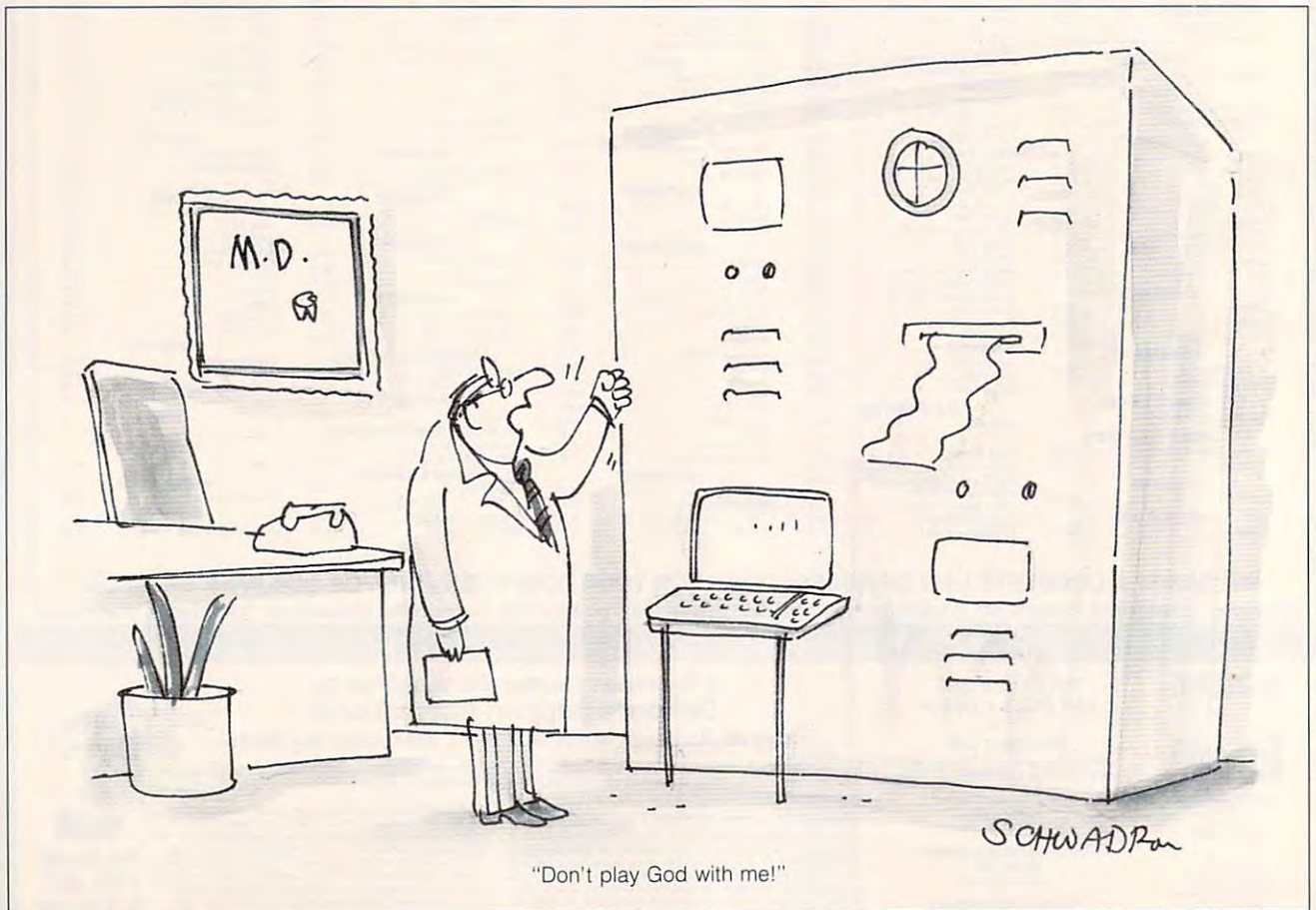
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## TONY LARUSSA'S ULTIMATE BASEBALL

Recently, there's been a wave of sports games for home computers released with celebrity endorsements. From Joe Montana to Jack Nicklaus, famous sports figures are lending their names to computer sports titles, some excellent and some only average.

The Oakland A's Tony LaRussa is the latest baseball manager to put his name on a game. The result, *Tony LaRussa's Ultimate Baseball*, has smooth graphics and simple gameplay. It's a whole lot of fun, but I'm not sure the word *ultimate* fits well in the title. That's because no game has everything that players want, but *Ultimate Baseball* is definitely one of the best baseball games out for the 64/128.

The game's interface is easy to learn. The main screen shows the bases and a little bit of the outfield, and the view shifts when necessary. During a pitch, a closeup of the pitcher and batter appears in the center of the main screen. The view is from behind the batter. When the ball is hit, the view tracks the flight of the ball. The statistics (score, runs, balls, strikes, and outs) are displayed beneath the main playing screen. Also, *Ultimate Baseball* displays the pitcher's name and average and the batter's name and batting average. Importantly, in the center of the strip along the bottom is a radar view with a black dot that represents each runner. This lets you keep track of the men on base when the view shifts into the outfield and bases are no longer visible.

Action begins after a short setup phase. Players select the difficulty level first. The Pro difficulty level requires the player to do everything. In the Rookie level, the computer fields the ball but doesn't throw it to the right plate. Also in the Rook-



Smooth graphics and simple gameplay, make Tony LaRussa's *Ultimate Baseball* a whole lot of fun.

ie level, when the player turns pitching over to the computer, it always tries to throw a strike. The difficulty option allows newcomers to *Ultimate Baseball* to jump right in and have a fighting chance. Next, players choose the starting lineup and batting order. Then the real fun begins!

*Ultimate Baseball* has a lot of features that make playing the game effortless, with all of the attention placed on the game itself. The feature that separates this game from other baseball simulations is the manager option. At any time in the game, you can interrupt the current play and make a managerial decision or turn control over to the computer. If your team is at bat, the manager options are pinch hit, pinch run, and bullpen (to warm up a relief pitcher).

When your team is fielding, there are more options. You can bring in a new pitcher; change your infield defense strategy; and play the outfield deep, shallow, or normal. These manager options require only a push of the joystick and allow complete con-

finding the right view.

Expansion disks are on the way to complete the *Ultimate Baseball* playing environment. The teams that come with the game have the best players from the history of baseball on each team. From Mike Schmidt and Nolan Ryan to Wade Boggs and the infamous Pete Rose, players are represented by their average career stats. Future expansion disks include the greatest teams from 1901 to 1968, the greatest teams from 1969 to 1989, and the 1990 teams. These disks will add more excitement to the game, but nothing beats head-to-head play in *Ultimate Baseball*. The game allows single- and two-player games and even lets you place both teams under computer control so you can sit back and watch the action.

Although 64/128 owners miss out on some features found in other versions of the game, this one is still quick moving and a lot of fun. Unlike some other baseball games I've played, *Ultimate Baseball* doesn't require unforgiving accuracy. This is important in the heat of a battle on the dirt diamond. The sound effects are nice, and the opening theme gets you in the mood. If you're looking for a fun, expandable baseball game for your home computer, *Ultimate Baseball* makes a strong argument for your adding it to your library.

Tony LaRussa should be happy to have his name on *Ultimate Baseball*. Play ball!  
RUSS CECCOLA

trol of your team's strategy. You make your selections and all other choices in *Ultimate Baseball* by moving the joystick.

Graphically, *Ultimate Baseball* is very nice. The stadium is big, and it takes a good wallop to knock a ball out of the park. The animation is very good, especially in the closeup view of the pitcher and batter. Their movements are realistic. Also, if there's a runner on second base, you can see him shifting back and forth in the background.

*Ultimate Baseball* pans the view to follow the ball quickly. This is important for close plays. The radar view completes the graphics information both players need. Overall, *Ultimate Baseball* is a slick-looking game with a well-organized screen. Players can focus on the game and not have to worry about

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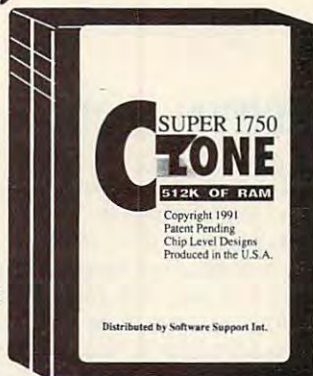
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## MEDIEVAL LORDS

War games set in modern times sometimes contain too much detail to be fun. With the availability of so many tanks, planes, ships, other vehicles, and weapons in your electronic arsenal, there's no limit to scenarios or focus.

*Medieval Lords* takes the player back to a time where such machines didn't exist. It puts the emphasis on the power of soldiers to win battles. With the feel of the conquest board game Risk and enough pseudohistorical events to make the game more realistic, *Medieval Lords* is a challenging romp through the Middle Ages in Europe, North Africa, and the Middle East.

Your role in *Medieval Lords* is that of an adviser to a leader (king, emperor, sultan, or duke) of a number of provinces. Each group of provinces is a domain. The goal of the game is to help expand your lord's domain through diplomacy, politics, economics, and battles. Points earned throughout the game determine your overall success.

The game system is flexible and lets you alter the computer player's skill level, game length, portion of map used, and number of actions per turn. *Medieval Lords* allows as many as ten players, with up to six computer players. Each turn phase in *Medieval Lords* represents one game year. With six scenarios in the game and variable game length, players can enjoy simple ten-year challenges or undertake century-long conquests.

*Medieval Lords* starts the player with only a few provinces in a domain. It takes only a few moves to get used to the game's interface. From then, you'll be building

empires of which Napoleon himself would be proud. The game is controlled entirely by joystick. You enter commands by making selections from various menus. A map of nearby provinces takes up almost the entire screen, with room left on the bottom for the current command menu. The map scrolls and shows only a small portion of the overall game map.

Each turn in *Medieval Lords* consists of three phases: an events/tax collection phase, an action phase, and an end year phase. The first phase is largely informational. It itemizes any significant events and tells you how much money you'll take in that year.

One of the setup options at the beginning of the game concerns display mode. The choices are to display all actions, war actions only, actions affecting players only, and actions affecting humans only. You will initially notice the differences in display mode in the events/tax collection phase.

You can waste a lot of time reading messages in *Medieval Lords*. To speed gameplay, I would suggest setting the display mode to actions affecting players only to eliminate extra information that may not affect the game. After the events/tax collection phase, you'll know how you stand financially as well as politically. Deaths, births, crusades, plagues, and invasions are all revealed during this phase. Note each event and use that information to guide your actions in the next phase of the game.

You make all your decisions and important moves in the action phase. You can perform as many minor actions and information requests as you want, but only as many major actions as

you selected during game set-up. Major actions include raising armies, subverting nobles, building castles, and supporting towns. Minor actions include moving armies, declaring war, and proposing an alliance.

You'll quickly learn the best approach to some situations. If you make the wrong decisions, you have another chance to better your position during the next year. The first phase sets up the situation, and the action phase lets you react. The action phase is the fun part of the game.

The end year phase informs you of your financial situation and updates your score. You quickly learn whether or not you've made the right moves in the action phase. In the first few turns of the game, you'll probably fall into debt. If you go into debt beyond double your income for that year, you have to correct your status in this phase. A deficit strategy menu pops up from which you may choose such actions as bluffing it out or depriving forces by not paying soldiers.

*Medieval Lords* is set up logically, and gameplay goes smoothly. The variety of conditions under which you may play increases the game's replay value. The manual is well organized, and a reference section takes up half of the text.

Martin Champion, a professor of history, designed the game and brought his professional expertise into the gameplay. Events like the Black Plague, nomadic invasions, and the influential presence of a Pope make *Medieval Lords* more historically accurate. Champion's goal was to design a game in which you can take an active part in the Middle Ages

through your advice to a powerful ruler. He succeeds in this goal and provides us with a game that's fun and challenging as well as informative and dynamic.

Instructors can easily use *Medieval Lords* as an effective teaching tool. It would certainly make a history class more interesting. Graphics are nothing special in *Medieval Lords*. The map consists of rough shapes to represent provinces. It does its job and nothing more.

There's no sound in the game. The strength of *Medieval Lords* is in its detail and successful attempt to bring the Middle Ages to life. Medieval times have always fascinated me. Life was simple by today's standards, but people who lived then had to be tough to survive.

*Medieval Lords* is perfect for anyone either interested in this time period or looking for a dynamic game of conquest that puts the action back in the hands of players.

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## THE WRITE STUFF

*The Write Stuff* word processor for the 64 caught my attention because it's one of the few programs that supports Commodore RAM expansion units (REU). It's proved to be a bug-free and docile program. It's also a powerful one that works nicely with Creative Micro Designs' Jiffy-DOS and Schnedler Systems' Turbo Master CPU-enhancement ROMs. These or similar enhancement ROMs for speeding up the Commodore DOS and CPU are essential for high

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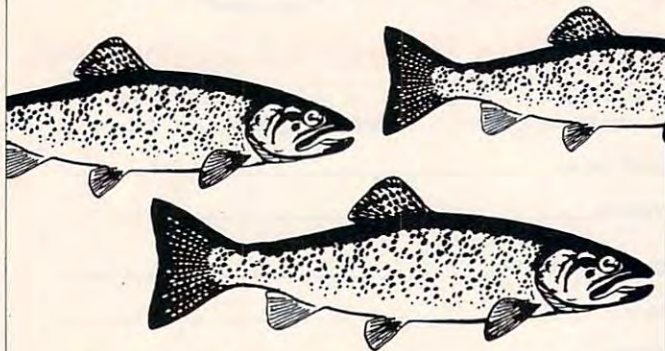
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productivity on a 64 system.

I love the way the program automatically loads the most recent rough draft (saved with a special filename) when it boots, as well as the convenience of being able to toggle multiple drives. *The Write Stuff* has all of the essential formatting features one expects in a fully endowed word processor.

Two text areas can be opened at one time to hold different documents, allowing for cutting and pasting between the two. Moreover, the size of the two areas can be varied in steps of 256 bytes for maximum flexibility and optimum usage of available memory.

Yet another welcome feature of *The Write Stuff* is its support of more than 60 user-definable keyboard macros. Commands which would normally require you to press three or four keys, such as the Search-and-Replace function, can be redefined and activated by keys of your choice. You could assign that function to the Commodore key and the S key, for example. Defined macros can be saved as defaults so that when the program is used again, those keys already are defined. The same holds true for printer macros.

A child can easily use this program with its onscreen menus. The keys that invoke various commands and functions are logical, and learning them requires little help from the manual. On the other hand, a seasoned writer can really put this word processor through its paces in command mode with the program's macros and other advanced features.

The manuals are very well laid out, indexed in detail, clear, and informative (almost pithy in places). Plenty of help files and tutorials exist on the disks for those who need more assistance. The program isn't copy-protected; therefore, you don't have to shell out extra dollars for backups.

The integrated spelling checker is reasonably fast

and intelligently designed. It uses two dictionaries, a short one (17,000 words) for quick checking and a larger one (61,000 words) for more thorough checking. If you need additional words, another 15,000 can be added, bringing the total to more than 93,000 words!

The REU can hold the dictionary and speed up the spelling-check process immensely, providing you don't mind the initial loading time. If you plan to check the spelling of several documents in one session, then using the REU is a worthwhile option.

A readable high-resolution 80-column preview helps you check page formatting and the layout of any tables. All colors (menu, background, clock, and so on) can be modified and saved as defaults.

The program's 16 printer toggles and 20 printer macros enable you to invoke advanced printer functions. Up to eight predefined printer control codes can be sent for each macro. You can even change the printer's secondary address while printing. Thus, Commodore graphic characters can be printed using secondary address 0 (Commodore emulation) and advanced printer functions can be accessed using secondary address 4 (transparent emulation) in the same document. Since all printer codes are user-definable, *The Write Stuff* can support most dot-matrix, letter quality, and laser printers.

Now to voice some beefs. The manual glosses over the actual method of invoking printer macros, although a help file makes it easy to figure out. Also, the program indicates the cursor position by column and paragraph numbers, but not by line number. That added feature would help when formatting nonstandard page lengths or pages with a mixture of fonts that print six or eight lines per inch.

One gripe that I have against this and most other 64 word processors (except *geoWrite*) is the limited size

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of documents it can hold in RAM. A 15K–22K text space is simply not adequate for serious work. Linked files (supported by *The Write Stuff*) are all right when printing, but not for editing. One cannot search and replace a phrase or check the spelling across several linked files. For its price, however, I can't realistically expect *The Write Stuff* to be any better.

The other problem I have is with tables. This complaint isn't aimed specifically at *The Write Stuff*, but at all similar 40-column word processors. Programs like *Omniwriter* or *geoWrite* with their scrolling displays make it much easier to line up columns. Word processors with an 80-column editing mode are better, but 40-column editors wrap the rows of a table over two lines, making it tough to check alignment.

For preschool children and visually impaired users, there's even a talking version of *The Write Stuff*. The quality of the speech can be altered using up to nine voices with different pitch, mouth, throat, and speed controls. A very useful feature is the phoneme generator. As *The Write Stuff* with the required Software Activated Mouth reads a document, it can generate a phoneme file, which can be edited like a word processor file to produce a less robot-like pronunciation and inflection.

In summary, I can confidently state that 64 users will rarely come across a program in any category that offers so much power, flexibility, and ease of use at such an affordable price.

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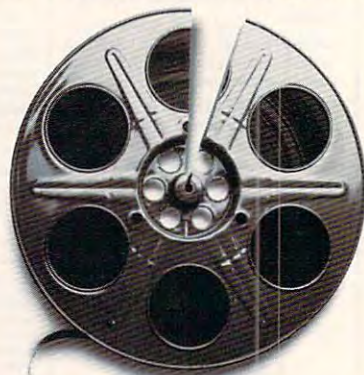
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# MACHINE LANGUAGE

Jim Butterfield

## PUTTING A HEX ON YOUR OUTPUT

Sometimes, a program needs to print a value in hexadecimal. The byte to be printed must be broken in two. The high nybble is obtained by performing four LSR operations, and the low nybble by ANDing # $\$0F$  with the original value. Each of the two values will then be a binary number 0-15. All you need to do is change this value into a printable ASCII character from 0 to 9 or A to F.

If the binary value is in the range from 0 to 9, you can OR a value of  $\$30$  to get the ASCII equivalent. If the value is in the range from 10 to 15, you must add  $\$37$  to put it in the range A-F.

Assume that a four-bit value, 0-15, is in the A register.

```
ORA # $\$30$ 
CMP # $\$3A$ 
BCC GOTDIG
ADC # $\$06$ 
GOTDIG. . . .
```

The program adds  $\$30$ . If the value exceeds  $\$3B$ , it adds  $\$07$  more. It looks as if we're adding  $\$06$ , but the set carry bit makes a total of  $\$07$ .

The method described uses eight bytes of code and does the job well. You might occasionally see an interesting alternative method which uses the computer's decimal mode. Decimal mode for hex calculations? Read on. Decimal mode operates only on the ADC (Add with Carry) and SBC (Subtract) commands. In decimal mode, the normal binary add or subtract is performed; then the computer inspects the result to see if it needs decimal adjustment. Thus, binary  $\$08$  plus binary  $\$07$  would add to produce binary  $\$0F$ ; in decimal mode, the computer would say, "I'll

adjust that to hex  $\$15$ , since F is not a valid decimal digit." Consider what would happen if we added 0 in decimal mode to a nybble value in the range from 0 to 15. Decimal mode performs the addition: 0 to 9 remain unchanged, but value 10 to 15 (hex A to F) are adjusted to new values of  $\$10$  to  $\$15$ . We've added six to those numbers—without a program test!

There's still a piece missing. We wish to add seven, not six, to these high values. Can we do it? Yes, if we use a trick. Instead of adding 30 to your original nybble, we'll use two additions to add a total of 130—in decimal mode, of course. The extra hundreds digit will disappear. It's a carry that we'll never use.

In the following code, see if you can detect how the carry bit is triggered.

```
SED
CLC
ADC # $\$90$ 
ADC # $\$40$ 
CLD
```

This month's program will read any program file you name and print out the first two bytes as a hexadecimal address. If the load address is  $\$0801$ , the program file is likely from a 64. A value of  $\$1C01$  signals a 128, and  $\$0401$  will spot a program that's load-compatible with the early PET/CBM type computers. Addresses from the VIC-20 will vary, depending on how much memory has been fitted.

The 128 will produce a variant address if you save a program while in graphics mode. Almost all BASIC programs will have addresses that end in the digits 01. Addresses that don't end in 01 signal a program that starts in an unusual way. Such programs will usually be machine

language programs loaded with LOAD "filename",8,1.

The machine language program is poked into addresses  $\$2000$  to  $\$2040$ . When it's called by the BASIC program, the selected file will already be open as logical file number 1. Our program connects to this file, grabs two bytes, and puts them into addresses  $\$2200$  and  $\$2201$ . Then it prints a dollar sign. It calls a subroutine at  $\$202A$  to convert to hexadecimal and print. A carriage return is printed to wind up the job neatly; then control is passed back to BASIC.

The subroutine at  $\$202A$  splits the value it finds in the A register into two pieces of data (a high nybble and a low nybble). At  $\$2035$ , it converts each nybble to a printable hex digit and prints it. The decimal mode method is used.

BASIC pokes the machine language program into place, asks for the filename, opens the file, calls the machine language program, then closes the file. The file could have been opened and closed within the machine language program, but it's often more convenient to do a job like this in BASIC.

```
100 DATA 162,1,32,198,255
110 DATA 32,228,255,141,0,34
120 DATA 32,228,255,141,1,34
130 DATA 169,36,32,210,255,162
140 DATA 1,189,0,34,32,42,32
150 DATA 202,16,247,32,204,255
160 DATA 169,13,32,210,255,96
170 DATA 72,74,74,74,74,32,53
180 DATA 32,104,41,15,120,248
190 DATA 24,105,144,105,64,216
200 DATA 88,76,210,255
300 FOR J=8192 TO 8256:READ X
310 POKE J,X:T=T+X:NEXT J
400 INPUT "FILENAME";F$
410 OPEN 15,8,15:OPEN 1,8,3,F$
420 INPUT#15,E,E$,E1,E2
430 IF E<>0 THEN PRINT
    E;E$;E1;E2:END
440 SYS 8192:CLOSE 1
```

This program will read any file you name and print the first two bytes as a hex address.



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Steve Vander Ark

## CLEANING MY DESK

It's about time I did something with the odds and ends that have been accumulating on my desk, tidbits of information which don't lend themselves to a whole column or are follow-ups to previous columns.

Some of this information has been sent in by readers, some I've picked up on Q-Link, and some has come from chatting with people like Jim Collette (geoProgrammer extraordinaire) and Doug Cotton (chief something-or-other at Creative Micro Designs). I figure we can't go wrong with a column like this once in a while. I gain mouse-space on my desk, and you get a few gems of geoKnowledge to improve your work with GEOS.

Probably the most important addition you can make to your GEOS system is RAM expansion of some kind. While 512K is great, it's not the top of the line. REU upgrades are available from Melvin Montgomery (1504 Amherst Drive, Plano, Texas 75075); he will turn your 1750 into a 2MB powerhouse for \$200. If that's a little too expensive for you, he offers a variety of configurations for any of the 1700-series expanders or for geoRAM. He also sells RAM chips with instructions enabling you to do the upgrade yourself. If you want more information, write or talk to him on Q-Link, where his screen name is CMDR FIXER.

In my the August 1991 column, I discussed graphics utilities. I mentioned *ScrapIt!*, which clips large photo scraps from *geoPaint* pages. Several readers have written or sent me E-mail to suggest other useful graphics utilities.

Dick Estel of Fresno, California, recommends another utility called *ScrapIt!*—same name but with an exclamation

point. This program has the added feature of being able to import oversized scraps into *geoPaint*, not just *geoPublish*. *ScrapIt!* is by Michael W. Schell. It's shareware, with the fee to be donated to the Cystic Fibrosis Foundation.

*ScrapIt!* is also a graphics conversion program, translating *Doodle* and even *Koala* files with colors pretty much intact. Now that's quite a trick! You can download *ScrapIt!* from Q-Link. The files you need are SCRAPIT.SDA64 and SCRAPIT.DOC.SDA, uploaded by MichaelS30. I'll also put copies in BBS Post's GEOS section. Its telephone number is (616) 534-1346.

Also in the August column I mentioned *Screen Grabber*, which allows you to clip any section of the screen into a photo scrap. A similar program called *geoFetch* appeared on Lodestar disk #65. Back issues of Lodestar disks are available for \$14.95 plus \$1.50 shipping and handling from Softdisk Publishing, P.O. Box 30008, Shreveport, Louisiana 71130-0008. Make sure you request the disk by number.

I was getting very frustrated the other day trying to get a new AUTO.EXEC file to run on my boot disk. I called Jim Collette, the program's author, and he assured me that it should work, even with geoRAM, which occasionally causes troubles. As it turned out, the culprit wasn't the program but my boot disk. I had created a double-sided boot disk using *Maverick* so that I could put more files on it. I use a routine to load my RAM automatically as I boot, so I wanted *geoWrite* and some associated files on the boot disk. The AUTO.EXEC wouldn't run.

When I mentioned this problem to Collette, who has written plenty of AUTO.EXEC programs (*geoWizard* for example), he told me that the *Mav-*

*erick* routine for creating a double-sided boot disk has a bug in it. It makes the disk's boot routine forget that it's double-sided during the boot process. By the time the boot is over everything is back to normal, but if an AUTO.EXEC file is stored even partially on the back side of the disk, it will be inaccessible during the boot. Obviously, this would prevent the AUTO.EXEC from running.

A partial solution to this problem is to put your AUTO.EXEC files onto a new double-sided boot disk, before filling the disk with other files. This will ensure that the program is stored entirely on the front of the disk. Unfortunately, if your AUTO.EXEC is a file copier, as mine was, the files it'll be trying to copy might also be invisible on the back of the disk. As if that weren't enough, there's another possible problem. If you're booting in 80 columns, an AUTO.EXEC written only for 40 columns will be ignored during the boot routine. It simply won't run.

If you bought your *geoPublish* when it was first released, you probably received the one-disk version. This program is currently shipped in a two-disk version which has fixed several niggling little bugs. The version is still 1.0, although I'm told some files created with the second version difficult for the earlier version to read. The second disk is a clip art disk. If you want the upgraded version of *geoPublish*, send your old disk and a \$7 upgrade fee to BSW Replacement Department, 2150 Shattuck Avenue, Berkeley, California 94704. Include a note requesting the free upgrade/fix.

There! My desk is somewhat cleaner, but feel free to help me add to the clutter. Write to me in care of this column or send me E-mail on QuantumLink (SteveV14). I'll pass the word along. □

Here's a collection of odds and ends, that include REUs, graphic utilities, and AUTO.EXEC programs that refuse to run.

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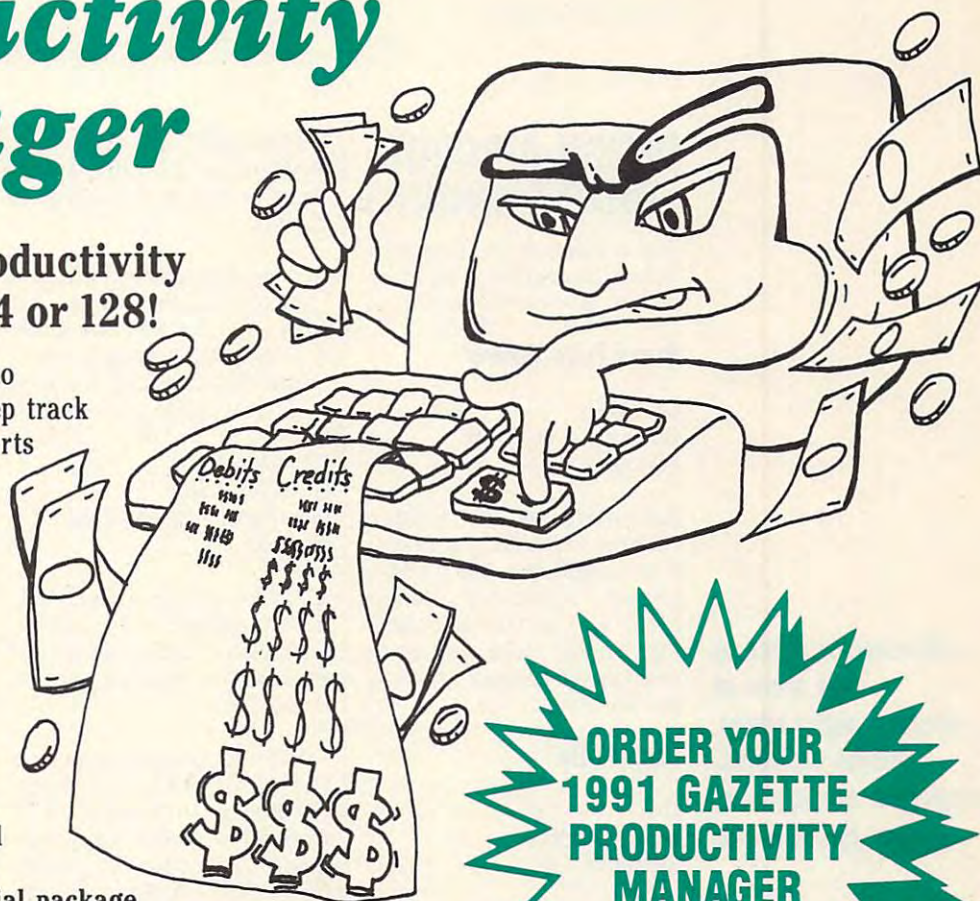
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# D'IVERSIONS

Fred D'Ignazio

## DESIGN-A-ROBOT CONTEST WINNERS

The winners of the Design-a-Robot Contest have been selected, and here they are.

### Grand Prize Winner

**GOLMER**  
By Gordon H. Smith  
Kenosha, WI

According to the judges, "Golmer embodies a unique robot-rental idea. He demonstrates extensive design plans with additional ideas in the works. Here are some great thoughts about what a robot can be!"

### Runners-Up

**CAT**  
By Lin Tholborn  
Stockton, CA

"CAT (Certified Actual Tool) has clever adaptive attachments, both whimsy and precision in the design, and well-thought-out remarks on functions and purpose: Robots are the outstretched arm of mankind."

**ALFRED**  
By Michael Tennant  
Washington, PA

"Alfred shows a delightful adaptation of butler features (a solar cell bowler, for example). It combines a match of robot design and personal robot experiences and ideas."

**ISAAC**  
By David Barrett  
Saginaw, MI

"Isaac indicates a clear understanding of robot elements and exemplifies a unique idea of robot software. With Isaac around, there would be many less worries."

**IMMACUBOT**  
By Matthew Boardman  
Chester Basin, Nova Scotia  
Canada

"Immacubot acts as a thoughtful explanation of what will work and what won't work. Immacubot demonstrates many clever ideas about a robot as maid and house servant."

**CRAMBOT 64**  
By Colin Wiebe  
Guernsey, Saskatchewan  
Canada

"Crambot 64 has a great illustration and key and is a demonstration of a nice design application of general robotic capabilities."

Additional runners-up include Gary Croll of Moreno Valley, California; R.W. Hansen of Cheyenne, Wyoming; Raymond Ellsworth of Charlotte, North Carolina; Randall Slinkard of San Diego, California; and Anthony Dannello of Whitestone, New York.

### Judges' Summary

As a judging team we were first impressed with the variety of responses. Each designer clearly created a robot of his or her own imagining. The robots' functions ranged from home security to maintenance of a golf ball driving range. In all, the most favorable entries were those which, more than supercomputers, fit the definition of a robot as a reprogrammable, multifunctional manipulator with mobility and sensory capabilities as defined by job needs. Furthermore, the contest winners demonstrated extensive thinking in the areas of creative applications, design concepts, electronic applications, and future plans.

With these parameters, neither the age of the designer nor the actuality of the design

(several entries are possible fantasies) seemed relevant. The ability of the entrants to communicate their ideas became the great equalizer.

### The Judges

Julie Thomas is an elementary teacher who caught the robot bug from her students. She has been recognized by US West, the Cooper Foundation, and the National Science Teachers Association for her work in teaching robot classes for teachers and kids in Nebraska. Thomas is a graduate teaching assistant at the University of Nebraska at Lincoln while working on a doctorate in science education. Thomas has an art teacher husband and two teenage daughters.

Edward Radanovich was our other judge. He is a math teacher, computer science teacher, and computer specialist at Omaha South High School in Nebraska. Radanovich became interested in the use of robots in education while teaching at South High. During the last five years he has included units on robotics in his computer literacy classes. He and his classes have programmed the RB5X robot and have assembled several of the MOVIT robots like those offered as prizes in the contest.

Prizes for the contest include a CompuBot robot, a Capsela 2000 robot, and MOVIT robots.

I want to thank everyone for your delightful, humorous, and ingenious robots! They were a pleasure to review, and they've given the judges and me hope that the robot revolution may one day still happen.

In my column next month, we'll take an in-depth look at the grand prize-winning robot, Golmer, and its designer, Gordon H. Smith. □

Winners excelled in the areas of creative applications, design concepts, electronic applications, and future plans.

# BEGINNER BASIC

Larry Cotton

## THE KEYBOARD BUFFER

This month I'll present a short program that makes use of the 64's keyboard buffer. For those who are unfamiliar with the buffer, it's a ten-byte long area in the 64's memory, from 631 to 640, which stores keystrokes until the computer has time to process them. There's also a memory location, 198, which contains the number of bytes currently stored in the keyboard buffer. We'll touch on that as well.

You may have noticed the buffer in action when you out-type *SpeedScript* or some other word processor. When you pause, the buffer gets its chance to spew its contents. You can also see its effect by listing a BASIC program and then, while it's listing, entering RUN and pressing Return.

To test the effects of the keyboard buffer in the immediate mode, enter a fairly long FOR-NEXT loop and then type a few (ten or less) keys while the loop is running. Make sure your loop is long enough to give yourself enough time to enter several numbers or letters. After the loop ends, the characters you typed will be displayed on the screen. Those characters were stored in memory locations 631-640, while the total number of characters entered was stored in memory location 198.

This type of buffer is known as FIFO. That stands for First In, First Out. This lets you enter characters or text faster than the computer can print them, without losing characters. The first character you type will be the first one the computer prints. Characters entered after the buffer is full will be ignored.

You can use this little buffer in an unusual way to simulate keystrokes. That is, you can

trick the 64 into thinking that you have typed characters, when in fact they were poked in. Tricking the computer in this way is called using the dynamic keyboard technique. The below program illustrates this technique.

### COLORCALC

```
EA 10 REM TO DO SQR(X) ENTER X↑(1/2)
SM 20 C$=CHR$(175):D$=CHR$(20):E$=CHR$(61)
GF 30 POKE214,13:PRINT:PRINT"{GRN}PRESS ANY KEY. . ."
ME 40 POKE214,16:PRINT:PRINT"{6 SPACES}"
HB 50 GETAS:IFAS=""THEN50
DD 60 PRINTCHR$(147):POKE53280,1:POKE53281,1
BQ 70 POKE214,7:PRINT:PRINT"{RED}ENTER NUMBERS AND SIGNS, THEN PRESS ={DOWN}{BLU}"
AK 80 GOSUB150:X$=B$
BF 90 PRINT"{WHT}PRINT"X$
BK 100 PRINT"{3 DOWN}RUN{BLU}"
BD 110 FOR T=631 TO 637:POKET,145:NEXT T
GJ 120 POKE638,13:POKE639,13
AH 130 POKE198,9
CS 140 END
MR 150 B$="":L=0
MH 160 PRINTC$;
BB 170 GETAS:IFAS=""THEN170
EQ 180 IFAS=D$THEN GOSUB240:GOTO160
PJ 190 IFAS=E$THEN PRINTD$A$:RETURN
MQ 200 IFAS=CHR$(94) THEN220
XX 210 IFAS<CHR$(40) ORAS>CHR$(57) ORAS=CHR$(44) THEN170
BM 220 PRINTD$A$;:B$=B$+A$:L=L+1:IFL=39 THEN ENDED
MC 230 GOTO160
KG 240 IFL=0 THEN PRINTD$;:RETURN
JC 250 PRINTD$A$;:L=L-1:B$=LEFT$(B$,L)
CG 260 RETURN
```

This is a program that converts your 64 into a calculator. You may enter any string of numbers and signs, and the computer will process them in

the correct mathematical order. (This simple program will not accept trigonometric functions or scientific notation, but it will accept parentheses and exponents.)

Briefly, here's how it works. The calculation line, as it's entered, is stored as B\$ (line 220). Illegal characters are screened out, except for the Insert/Del key. When the user presses the equal sign, X\$ becomes B\$ (line 80). The tricky part is line 90, where the word PRINT and X\$ get printed in the same color as the screen. Since that color is white, you can't see it, but it's there.

Then the cursor moves down three lines and prints the word RUN—again in white—so it's hidden from the user. Now it's simply a matter of bringing the cursor up to the line which contains PRINT and simulating a press of the Return key. This is where the dynamic keyboard comes in. Line 110 pokes seven cursor-ups into the keyboard buffer, while line 120 pokes CHR\$(13) twice. Line 130 pokes the number of keystrokes to memory register 198. Meanwhile, the cursor has been changed from white back to blue (end of line 100), so the answer is printed in blue on a white background—quite readable. The second carriage return is strategically placed on the line where RUN has been entered and is waiting for a new calculation, which effectively starts the program from the beginning again. If you'd like to see what's happening—albeit rather quickly—POKE 53280 and 53281 with a 0 in line 60.

Next month we'll write a handy little program that will print amortization schedules. It can be of use to anyone who is buying a home and has a mortgage. □

**The 64's keyboard buffer holds keystrokes until the CPU is ready to process them.**

# PROGRAMMER'S PAGE

Randy Thompson

## PEEKABLE POKES

I remember how frustrating it was when I wrote my first BASIC sound program. Poking the proper numbers into the 64's SID chip registers was difficult enough, but every time I peeked those registers to manipulate the values stored there, all I got was a 0. Nothing seemed to work.

No doubt you veteran 64 programmers out there know what I was doing wrong. As most of us have already learned, all but the last four SID chip registers are write-only. In other words, they can be poked but not peeked. Peeking any one of the SID chip's first 25 registers returns a value of 0, no matter what value that register actually contains. When trying to create and edit sounds, this limitation can be quite irritating.

A few years ago I solved this problem with a little machine language routine I call *Peekable Pokes*. As the title suggests, this program allows you to peek the SID chip registers (locations 54272-54300) and receive the value of the last number poked there. For example, to find your 64's volume setting, all you have to do is peek location 54296.

*Peekable Pokes* is listed below in the form of a BASIC subroutine. When executed, this subroutine stores *Peekable Pokes*' machine code in memory at locations 49152-49295 and then installs the routine with a SYS command. You can include this subroutine in your own programs and execute a GOSUB 1000 to activate *Peekable Pokes*. Of course, you may change the subroutine's line numbers if you need to. Line 1030 returns you to your main program.

*Peekable Pokes* works by intercepting the computer's normal PEEK and POKE routines.

When one of these two BASIC commands is used, *Peekable Pokes* is called instead. At this point, *Peekable Pokes* determines whether or not the memory location being accessed is a SID chip register. If not, control is given back to the normal ROM routines. If it is, one of two things happens, depending on whether the statement intercepted is a PEEK or a POKE.

In the case of a POKE, the value being poked is stored in two places. Not only is it placed in the appropriate SID chip register, but it is also placed in a special storage buffer located in memory at locations 49295-49323. By placing this number into normal RAM, we can peek it later.

The way this new PEEK routine works is simple. Instead of fruitlessly peeking the specified SID chip register (as the BASIC command would do), *Peekable Pokes* retrieves the corresponding value from its storage buffer.

When using *Peekable Pokes*, keep in mind that you must install the machine code before you poke any values into the SID chip. And unless you have previously poked a number into a register, you cannot reliably read that register via PEEK.

Speaking of the SID chip, this music and sound effects generator gives the 64 impressive audio capabilities. Each of its three separate voices has 16-bit frequency resolution, waveform control, envelope shaping, oscillator synchronization, and ring modulation. When you add high-pass, low-pass, and band-pass filters, it's no wonder programmers can make the 64 talk.

How about sending me some small sound programs for possible publication here in "Programmer's Page." What I'm looking for are crazy sound effects—no songs, just

some good honest weird noises. I'd like to build a collection of laser zaps, engine roars, squeals, blips, kabloooooees, and so on. If your sound is published, you'll receive our usual monetary compensation.

So, please, mail in those sound effects. Send your programming tips and tricks to Programmer's Page, COMPUTE's Gazette, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. We pay \$25-\$50 for each tip we use.

## PEEKABLE POKES

```
CK 1000 REM PEEKABLE POKES
MB 1010 FOR I=49152 TO 49295:READ D:CK=C
      K+D:POKE I,D:NEXT
ED 1020 IF CK<>15281 THEN PRINT "*** ERROR IN DATA STATEMENTS ***":END
JD 1030 SYS 49152:RETURN
HA 1040 DATA 169,21,141,8,3,169,192,141
GG 1050 DATA 9,3,169,70,141,10,3,169
RK 1060 DATA 192,141,11,3,96,32,115,0
FP 1070 DATA 32,30,192,76,174,167,208,1
FF 1080 DATA 96,233,128,144,7,201,23,240
BD 1090 DATA 6,76,243,167,76,165,169,32
GR 1100 DATA 115,0,32,235,183,32,132,192
XR 1110 DATA 208,9,32,39,184,164,20,153
DC 1120 DATA 143,192,96,76,39,184,169,0
KR 1130 DATA 133,13,32,15,0,201,194,240
KJ 1140 DATA 6,32,121,0,76,141,174,32
GQ 1150 DATA 115,0,32,241,174,169,107,133
RR 1160 DATA 85,169,192,133,86,32,84,0
JM 1170 DATA 76,141,173,165,21,72,165,20
KE 1180 DATA 72,32,247,183,32,132,192,208
QK 1190 DATA 8,164,20,185,143,192,76,26
FQ 1200 DATA 184,76,22,184,165,20,201,24
JE 1210 DATA 176,4,165,21,201,212,96,0
```

Here's a way to peek the SID chip's first 25 registers to determine what values have been poked there.

# PROGRAMS

## GRAPHOS For c-128

By Frank Gordon

Certain aspects of math and science can be difficult to comprehend in a purely theoretical presentation. For many people, it helps to have such material presented in the form of a graph. That's where *Graphos* comes in.

*Graphos* (graph operating system) is a graphics tool for studying math and science formulas. It serves as electronic graph paper, enabling a student to rapidly explore and plot different math and science equations.

### Typing It In

*Graphos* is written entirely in machine language, but it loads and runs like a BASIC program. To enter it, use *MLX*, our machine language entry program; see "Typing Aids" elsewhere in this section. When *MLX* prompts you, respond with the values given below.

Starting address: 0801

Ending address: 0BE0

Be sure to save a copy of the program before you exit *MLX*.

*Graphos* installs a modified copy of BASIC in RAM, giving you four new programming commands.

SCREEN1 turns the hi-res screen on, and SCREEN0 turns it off.

HUE0,1 provides for a plot of black lines on a white background. HUE1,0 would print white on black. Use any of the 64's 16 colors for the combination of your choice.

WIPE rapidly clears the hi-res screen.

PLOTx,y (or other defined variables) graphs a function.

Since *Graphos* operates with a modified BASIC in RAM, certain error conditions and pressing the Run/Stop-Restore keys will cause the original ROM to reappear. To reengage *Graphos*, enter POKE 1,54. These new functions are illustrated in the demonstration programs *Axis* and *Vibration*.

### Using the Program

When you load and run *Graphos*, it sets up the graph operating system with its new BASIC commands. You can then load and run your own BASIC plotting programs such as *Axis*, which

serves as a demonstration program.

Let's take a look at *Axis* to examine some useful features. Because the *x*-axis prints differently to the screen and printer, line 110 gives you a choice between the two. The default is S. For either the screen or printer, the constants Z, Z1, and Z2 are set to give an undistorted graph. The position of the coordinate system is controlled by the variables XT, YT, XS, and YS in line 155. These establish the position of the *x*- and *y*-axes and their starting positions. Then EX and EY expand or scale the graph. Setting these variables in line 155 means that you can rapidly change the axis positions. For example, list *Axis* and change a few of the variables. Here are three different versions you may want to try. The first changes only line 155; then a few additional changes are added.

155 XT=159: YT=10: XS=Z1: YS=10: EX=5\*Z:  
EY=2

155 XT=Z2: YT=10: XS=Z2: YS=10: EX=20\*Z:  
EY=2

250 FOR X=0 TO 8 STEP .05

155 XT=Z2: YT=100: XS=Z2: YS=0: EX=3\*Z:  
EY=10

250 FOR Y=-8 TO 8 STEP .05

260 X=Y\*Y

270 X1=EX\*X+XT: Y1=EY\*Y+YT: PLOTX1,Y1:  
NEXTY

Once the *x*-axis and *y*-axis have been set, the program can be used as a template for others.

*Vibration* is another sample program. It illustrates a common curve found in science. The vibration is damped by friction or some other outside force, such as a shock absorber. Change variable DF to modify the degree of damping.

### GRAPHOS

```
0801:0C 08 0A 00 9E 20 32 30 64
0809:36 32 00 00 00 A0 00 84 C7
0811:61 A9 A0 85 62 B1 61 91 D6
0819:61 C8 D0 F9 E6 62 A5 62 34
0821:C9 C0 D0 F1 A0 02 B9 D9 D9
0829:08 99 BE A0 88 10 F7 A0 9A
0831:03 B9 DC 08 99 E5 A0 88 7B
0839:10 F7 A2 05 BD E0 08 9D 13
0841:F1 A0 CA 10 F7 A2 03 BD DA
0849:E6 08 9D 09 A1 CA 10 F7 63
0851:A9 4B 8D 1C A0 A9 C4 8D 3F
```

```
0859:1D A0 A9 82 8D 30 A0 A9 95
0861:C4 8D 31 A0 A9 35 8D 40 E4
0869:A0 A9 C4 8D 41 A0 A9 0B 90
0871:8D 36 A0 A9 C4 8D 37 A0 EF
0879:A9 4C 8D 3A A4 A9 00 8D 20
0881:3B A4 A9 C4 8D 3C A4 A0 21
0889:EA 84 FB A9 08 85 FC A0 3B
0891:00 84 FD A9 C4 85 FE A0 F7
0899:00 B1 FB 91 FD C8 D0 F9 5D
08A1:E6 FC E6 FE B1 FB 91 FD CF
08A9:C8 C0 31 D0 F7 A0 1B 84 7E
08B1:FB A9 0A 85 FC A0 00 84 B2
08B9:FD A9 CC 85 FE A0 00 B1 51
08C1:FB 91 FD C8 D0 F9 E6 FC B9
08C9:E6 FE B1 FB 91 FD C8 C0 D9
08D1:C5 D0 F7 A9 36 85 01 60 BC
08D9:48 55 C5 50 4C 4F D4 53 BD
08E1:43 52 45 45 CE 57 49 50 DB
08E9:C5 20 18 C4 8A 0A AA 4C 52
08F1:3D A4 50 46 53 20 9E B7 48
08F9:E0 01 90 05 F0 13 4C 48 D1
0901:B2 A9 1B 8D 11 D0 A9 15 47
0909:8D 18 D0 A9 97 8D 00 DD 6D
0911:60 A9 3B 8D 11 D0 A9 08 25
0919:8D 18 D0 A9 94 D0 EE A2 15
0921:20 A9 E0 85 FC A0 00 84 11
0929:FB 98 91 FB C8 D0 FB E6 B9
0931:FC CA D0 F6 60 20 7B C4 3D
0939:8A 0A 0A 0A 85 02 20 7F
0941:FD AE 20 7B C4 8A 05 02 16
0949:A0 C0 84 FC A0 00 84 FB 46
0951:A2 02 91 FB C8 D0 FB E6 8F
0959:FC CA 10 F6 91 FB C8 C0 DC
0961:E8 90 F9 60 20 9E B7 E0 1D
0969:10 B0 11 60 20 EB B7 86 7E
0971:02 A9 C7 38 E5 02 85 02 AF
0979:C9 C8 90 03 4C 48 B2 A5 73
0981:15 F0 0A C9 01 D0 F5 A5 15
0989:14 C9 40 B0 EF A9 00 85 D6
0991:FB A9 E0 85 FC A5 14 29 50
0999:F8 18 65 FB 85 FB A5 15 17
09A1:65 FC 85 FC A5 02 29 07 B4
09A9:18 65 FB 85 FB 90 02 E6 06
09B1:FC A5 02 4A 4A 4A 0A AA CA
09B9:BD F7 C4 18 65 FB 85 FB E4
09C1:BD F8 C4 65 FC 85 FC A5 7D
09C9:14 29 07 AA A0 00 78 A9 5B
09D1:34 85 01 B1 FB 1D 29 C5 07
09D9:91 FB A9 36 85 01 58 60 8D
09E1:00 00 40 01 80 02 C0 03 9C
09E9:00 05 40 06 80 07 C0 08 4F
09F1:00 0A 40 0B 80 0C C0 0D 02
09F9:00 0F 40 10 80 11 C0 12 B4
0A01:00 14 40 15 80 16 C0 17 68
0A09:00 19 40 1A 80 1B C0 1C 1B
0A11:00 1E 80 40 20 10 08 04 16
0A19:02 01 AD 00 DD 29 03 49 07
0A21:03 A0 06 0A 88 D0 FC 8D 4F
0A29:84 03 AD 18 D0 29 08 F0 A3
0A31:09 18 A9 20 6D 84 03 8D 18
0A39:84 03 A9 00 20 BD FF A9 27
0A41:04 AA A0 FF 20 BA FF 20 22
0A49:C0 FF A2 04 20 C9 FF B0 2B
0A51:03 4C 3D CC 4C 20 CD A9 96
0A59:08 20 D2 FF A9 0D 20 D2 68
0A61:FF A2 00 A9 01 8D C6 CD 52
0A69:A9 00 8D C7 CD A9 00 8D 23
0A71:C8 CD A9 C7 8D C9 CD 20 5E
0A79:E1 FF D0 03 4C 20 CD 8A D1
0A81:48 98 48 20 29 CD 68 A8 E4
```

# PROGRAMS

```

0A89:68 AA AD CD CD 2D CB CD 97
0A91:F0 0C AD CA CD 0D C6 CD 81
0A99:8D CA CD 4C 8F CC AD C6 77
0AA1:CD 49 FF 2D CA CD 8D CA 35
0AA9:CD 0E C6 CD AD C6 CD C9 CB
0AB1:80 F0 14 18 AD C7 CD 69 D7
0AB9:01 8D C7 CD AD C8 CD 69 1D
0AC1:00 8D C8 CD 4C 5D CC AD 4E
0AC9:CA CD 09 80 E0 2D 90 0A C6
0AD1:AD CA CD 29 1F 09 80 8D 67
0AD9:CA CD 8E CF CD A6 02 8E 31
0AE1:CE CD A8 20 D2 FF 98 CE 7E
0AE9:CE CD D0 F6 AE CF CD A9 5C
0AF1:01 8D C6 CD A9 00 8D CA D2
0AF9:CD 38 AD C7 CD E9 06 8D E4
0B01:C7 CD AD C8 CD E9 00 8D 54
0B09:C8 CD CE C9 CD AD C9 CD F3
0B11:C9 FF F0 03 4C 5D CC E0 AC
0B19:2D B0 1F 18 AD C7 CD 69 E8
0B21:07 8D C7 CD AD C8 CD 69 89
0B29:00 8D C8 CD E8 A9 C7 8D A3
0B31:C9 CD A9 0D 20 D2 FF 4C 3E
0B39:5D CC A9 0D 20 D2 FF 20 A3
0B41:E7 FF 60 AD C9 CD 29 07 11
0B49:8D CC CD AD C9 CD 4A 4A 52
0B51:4A A8 B9 92 CD 85 FB B9 4D
0B59:AC CD 85 FC 18 A5 FB 6D 76
0B61:CC CD 85 FB A5 FC 69 00 B5
0B69:85 FC 18 AD 84 03 65 FC 57
0B71:85 FC AD C7 CD 29 07 49 26
0B79:07 A8 C8 A9 00 38 2A 88 AE
0B81:D0 FC 8D CB CD 18 AD C8 A0
0B89:CD 65 FC 85 FC AD C7 CD D3
0B91:29 F8 A8 8A 48 78 A2 34 D5
0B99:86 01 B1 FB A2 36 86 01 25
0BA1:58 A8 68 AA 98 2D CB CD A4
0BA9:8D CD CD 60 00 40 80 C0 7C
0BB1:00 40 80 C0 00 40 80 C0 B6
0BB9:00 40 80 C0 00 40 80 C0 BE
0BC1:00 40 80 C0 00 40 00 01 06
0BC9:02 03 05 06 07 08 0A 0B 1A
0BD1:0C 0D 0F 10 11 12 14 15 22
0BD9:16 17 19 1A 1B 1C 1E 1F 2A

```

## AXIS

```

QA 100 REM -- AXIS --
CE 105 PRINT"{CLR}"
QH 110 PRINT"OUTPUT TO SCREEN
{SPACE}OR PRINTER (S/P)
{4 SPACES}S{3 LEFT}";:I
NPUTA$
KB 115 IF A$="S" THEN Z=1.33:Z
1=0:Z2=26.4:GOTO130:REM
VALUES FOR SCREEN OUTP
UT
BE 120 IF A$<>"P" THEN110
SC 125 Z=1.208:Z1=2.01:Z2=38.2
4:REM VALUES FOR PRINTE
R OUTPUT
QJ 130 SCREEN 1:HUE0,1
BE 135 WIPE
FJ 140 REM -- SET UP CONSTANTS
--
HS 145 REM -- XT AND YT SET X
{SPACE}AND Y AXES. XS A
ND YS SET START OF X AN
D Y AXES.
DG 150 REM -- EX AND EY ARE EX

```

```

PANSION FACTORS FOR X A
ND Y COORDINATES.
EX 155 XT=159:YT=100:XS=21:YS=
0:EX=5*Z:EY=1
GX 160 REM -- CALIBRATE X COOR
DINATES --
HM 165 FORX=XS TO319 STEP5*Z
KJ 170 Y=YT:PLOTX,Y:NEXTX
JF 175 FORX=XS TO319 STEP10*Z
BP 180 FORY=YT-1 TO YT+1:PLOTX
,Y:NEXTX:NEXTX
XH 185 FORX=Z2TO319 STEP50*Z
XE 190 FORY=YT-2 TO YT+2:PLOTX
,Y:NEXTX:NEXTX
AE 195 REM -- CALIBRATE Y COOR
DINATES --
JB 200 FOR Y=YSTO199 STEP5
KP 205 X=XT:PLOTX,Y:NEXTX
BX 210 FOR Y=YS TO 199 STEP 10
RM 215 FOR X=XT-1 TO XT+1:PLOT
X,Y:NEXTX:NEXTX
EB 220 FOR Y=YS TO 199 STEP50
FG 225 FOR X=XT-3 TO XT+3:PLOT
X,Y:NEXTX:NEXTX
BS 249 REM -- AXIS.1 GRAPH --
SQ 250 FOR X=-8 TO 8 STEP .05
HP 260 Y=X*X
GX 270 X1=EX*X+XT:Y1=EY*Y+YT:P
LOTX1,Y1:NEXTX
PQ 999 REM -- SCREEN OR HARDCO
PY --
GE 1000 GET A$:IF A$="" THEN10
00
JK 1010 PRINT "{CLR}":SCREEN 0
:PRINTCHR$(14)
RF 1020 PRINT"HARDCOPY (Y/N)
{4 SPACES}N{3 LEFT}";:
INPUTA$:IF A$="N" THEN1
080
JR 1030 IFA$<>"Y"THEN1010
GF 1040 PRINT"SINGLE OR DOUBLE
WIDTH (S/D){4 SPACES}
S{3 LEFT}";:INPUTA$
XB 1050 IFA$="S" THEN POKE2,1:
GOTO1070
KS 1060 POKE2,2:IFA$<>"D"THEN1
040
CR 1070 SCREEN 1:SYS52224
KS 1080 SCREEN 0:PRINTCHR$(14)
:LIST

```

## VIBRATION

```

BA 100 REM -- DAMPED VIBRATION
--
CE 105 PRINT"{CLR}"
QH 110 PRINT"OUTPUT TO SCREEN
{SPACE}OR PRINTER (S/P)
{4 SPACES}S{3 LEFT}";:I
NPUTA$
KB 115 IF A$="S" THEN Z=1.33:Z
1=0:Z2=26.4:GOTO130:REM
VALUES FOR SCREEN OUTP
UT
BE 120 IF A$<>"P" THEN110
SC 125 Z=1.208:Z1=2.01:Z2=38.2
4:REM VALUES FOR PRINTE
R OUTPUT

```

```

QJ 130 SCREEN 1:HUE0,1
BE 135 WIPE
FJ 140 REM -- SET UP CONSTANTS
--
HS 145 REM -- XT AND YT SET X
{SPACE}AND Y AXES. XS A
ND YS SET START OF X AN
D Y AXES.
DG 150 REM -- EX AND EY ARE EX
PANSION FACTORS FOR X A
ND Y COORDINATES.
KB 155 XT=Z2:YT=100:XS=Z2:YS=0
:EX=10*Z:EY=1
GX 160 REM -- CALIBRATE X COOR
DINATES --
HM 165 FORX=XS TO 319 STEP 5*Z
KJ 170 Y=YT:PLOTX,Y:NEXTX
JF 175 FORX=XS TO 319 STEP 10*
Z
BP 180 FORY=YT-1 TO YT+1:PLOTX
,Y:NEXTX:NEXTX
XH 185 FORX=Z2 TO 319 STEP 50*
Z
XE 190 FORY=YT-2 TO YT+2:PLOTX
,Y:NEXTX:NEXTX
AE 195 REM -- CALIBRATE Y COOR
DINATES --
JB 200 FOR Y=YS TO 199 STEP 5
KP 205 X=XT:PLOTX,Y:NEXTX
BX 210 FOR Y=YS TO 199 STEP 10
RM 215 FOR X=XT-1 TO XT+1:PLOT
X,Y:NEXTX:NEXTX
EB 220 FOR Y=YS TO 199 STEP 50
FG 225 FOR X=XT-3 TO XT+3:PLOT
X,Y:NEXTX:NEXTX
AD 249 DF=5:REM --- DAMPING FA
CTOR --
CK 250 FOR X=.001 TO 20 STEP .
05
QB 260 Y=80*SIN(3*X)*EXP(-X/DF
)
MJ 270 X1=EX*X+Z2:Y1=EY*Y+YT:P
LOTX1,Y1:NEXTX
PQ 999 REM -- SCREEN OR HARDCO
PY --
GE 1000 GET A$:IF A$="" THEN10
00
JK 1010 PRINT "{CLR}":SCREEN 0
:PRINTCHR$(14)
RF 1020 PRINT"HARDCOPY (Y/N)
{4 SPACES}N{3 LEFT}";:
INPUTA$:IF A$="N" THEN1
080
JR 1030 IFA$<>"Y"THEN1010
GF 1040 PRINT"SINGLE OR DOUBLE
WIDTH (S/D){4 SPACES}
S{3 LEFT}";:INPUTA$
XB 1050 IFA$="S" THEN POKE2,1:
GOTO1070
KS 1060 POKE2,2:IFA$<>"D"THEN1
040
CR 1070 SCREEN 1:SYS52224
KS 1080 SCREEN 0:PRINTCHR$(14)
:LIST

```

Frank Gordon lives in Orono, Maine.



## THE CUBE

By Michael J. Pope Jr.

If you like mind games, you'll love *The Cube*. The object of this simple but perplexing game is to move the 15 colored blocks to create the shape shown in the upper right-hand part of the screen.

### Getting Started

*The Cube* is written entirely in BASIC. To avoid typing errors, use *The Automatic Proofreader*; see "Typing Aids" elsewhere in this section. Be sure to save a copy of the program before you exit *Proofreader*.

### Playing the Game

When the game begins, you'll see four rows of colored blocks. All but one of the rows will contain four blocks. One row will contain a blank space. You'll see a gray frame around the first block; this frame represents your cursor. Use the cursor keys to move the frame from block to block.

To move the colored blocks around the screen, place your cursor on any block adjacent to the blank space and press f1. That block will move into the space that formerly was blank. (Diagonal moves are not allowed.) By moving blocks around in this fashion, you can eventually re-create the shape shown in the corner. To check your progress during the game, press f7. Press f7 at the end to see how many moves it took you to complete the puzzle.

## THE CUBE

```
AS 0 CLR
EQ 10 REM COPYRIGHT 1992 - COM
    PUTE PUBLICATIONS INTL L
    TD - ALL RIGHTS RESERVED
CQ 60 PRINT "{CLR}":POKE53281,1
    :POKE53280,1
GR 70 R=0:PRINT"{8 SPACES}THE
    {SPACE}CUBE "
DQ 80 A=1138:B=55410:FORK=1TO4
    :READG:FORT=1TO4:POKE A,
    160:POKEB,G:A=A+1:B=B+1
MG 90 NEXTT:A=A+36:B=B+36:NEXT
    K:POKE1141,32
RD 100 DIM A1(16):B1=1:TR=0
AG 210 R=R+1:K=INT(RND(0)*16+1
    ):IF A1(K)=0THEN T=T:
    {4 SPACES}READL:A1(K)=L
    :GOTO230
QQ 220 R=R-1:GOTO210
BX 230 IF R<>16THEN210
RF 235 A=1105:C=55377:Z=1
```

```
JH 240 FORM=Z TOZ+3 :B=A:D=C
QS 250 FORK=1 TO4:FORT=1 TO6:P
    OKED,A1(M):POKEB,160:B=
    B+1:D=D+1
CX 260 NEXT T:B=B+34:D=D+34:NE
    XT K:A=A+7 :C=C+ 7:NEXT
    M:A=B+19:C=D+19
SE 270 IFB>1690THENPRINT"
    {3 UP}":GOTO300
SK 280 Z=Z+4:GOTO240
BB 300 V=53248:POKE2040,13:FOR
    S=832TO832+62:READG:POK
    ES,G:NEXT
EF 310 POKEV+21,1:POKEV+39,15:
    POKEV,32:POKEV+1,60 :PO
    KEV+23,1:POKEV+29,1:X=3
    2:Y=60
JS 320 GET A$:IF A$="{UP}"AND
    {SPACE}Y>=100THEN Y=Y-4
    0:POKEV+1,Y:B1=B1-4:GO
    TO320
KR 330 IF A$="{DOWN}"AND Y<=14
    0THEN Y=Y+40:POKEV+1,Y:
    B1=B1+4:GOTO320
DH 340 IF A$="{RIGHT}"AND X<=1
    44THEN X=X+56:POKEV
    {2 SPACES},X:B1=B1+1:G
    OTO320
MM 350 IF A$="{LEFT}"AND X>=88
    THEN X=X-56:POKEV
    {2 SPACES},X:B1=B1-1:GO
    TO320
GD 360 IF A$="{F1}" THEN 400
GX 370 IF A$="{F7}" THEN 760
XP 380 GOTO320
GP 400 FORG=1TO16:IF A1(G)=1TH
    EN 420
EM 410 NEXT
DE 420 ON G GOTO 430,440,450,4
    60,470,480,490,500,510,
    520,530,540,550,560,570
    ,580
CE 430 IF B1=2 OR B1=5 THEN600
AS 435 GOTO320
SP 440 IF B1=1 OR B1=3 OR B1=6
    THEN600
EX 445 GOTO320
CH 450 IF B1=2 OR B1=4 OR B1=7
    THEN600
KA 455 GOTO320
JS 460 IF B1=3 ORB1=8 THEN600
RB 465 GOTO320
AS 470 IF B1=1 ORB1=6 ORB1=9 T
    HEN610
BB 475 GOTO320
ES 480 IF B1=5 ORB1=2 ORB1=7OR
    B1=10THEN610
FC 485 GOTO320
BF 490 IF B1=6 ORB1=3 ORB1=8OR
    B1=11THEN610
KD 495 GOTO320
FH 500 IF B1=7ORB1=4 ORB1=12TH
    EN610
AC 505 GOTO320
GS 510 IF B1=5 ORB1=10ORB1=13T
    HEN620
ED 515 GOTO320
JB 520 IF B1=9 ORB1=6ORB1=11OR
```

```
B1=14THEN620
JE 525 GOTO320
BX 530 IF B1=10ORB1=7ORB1=12OR
    B1=15THEN620
QF 535 GOTO320
GQ 540 IF B1=11ORB1=8 ORB1=16T
    HEN620
AF 545 GOTO320
BA 550 IF B1=9 ORB1=14THEN630
EG 555 GOTO320
QF 560 IF B1=13ORB1=10ORB1=15T
    HEN630
JH 565 GOTO320
XB 570 IF B1=14ORB1=11ORB1=16T
    HEN630
QJ 575 GOTO320
EQ 580 IF B1=15ORB1=12THEN630
AJ 585 GOTO320
JB 600 IF G=1 THEN B=1105:D=55
    377:GOTO 640
MM 601 IF G=2 THEN B=1112:D=55
    384:GOTO 640
XB 602 IF G=3 THEN B=1119:D=55
    391:GOTO 640
RP 603 IF G=4 THEN B=1126:D=55
    398:GOTO 640
FK 610 IF G=5 THEN B=1305:D=55
    577:GOTO 640
GC 611 IF G=6 THEN B=1312:D=55
    584:GOTO 640
MK 612 IF G=7 THEN B=1319:D=55
    591:GOTO 640
KD 613 IF G=8 THEN B=1326:D=55
    598:GOTO 640
BB 620 IF G=9 THEN B=1505:D=55
    777:GOTO 640
SH 621 IF G=10THEN B=1512:D=55
    784:GOTO 640
JR 622 IF G=11THEN B=1519:D=55
    791:GOTO 640
RH 623 IF G=12THEN B=1526:D=55
    798:GOTO 640
CC 630 IF G=13THEN B=1705:D=55
    977:GOTO 640
DX 631 IF G=14THEN B=1712:D=55
    984:GOTO 640
QF 632 IF G=15THEN B=1719:D=55
    991:GOTO 640
CX 633 IF G=16THEN B=1726:D=55
    998:GOTO 640
HP 635 GOTO 320
SS 640 J=0:TR=TR+1
QS 650 J=J+1:FORT=1 TO6:POKED,
    A1(B1):POKEB,160:B=B+1:
    D=D+1:NEXTT
XM 660 B=B+34:D=D+34:IF J>3THE
    N 670
AX 661 GOTO650
SB 670 IFB1=1 THEN B=1105:D=55
    377:GOTO 710
RM 671 IFB1=2 THEN B=1112:D=55
    384:GOTO 710
JA 672 IFB1=3 THEN B=1119:D=55
    391:GOTO 710
MM 673 IFB1=4 THEN B=1126:D=55
    398:GOTO 710
DK 680 IFB1=5 THEN B=1305:D=55
    577:GOTO 710
```

# PROGRAMS

```
BC 681 IFB1=6 THEN B=1312:D=55
584:GOTO 710
RJ 682 IFB1=7 THEN B=1319:D=55
591:GOTO 710
SC 683 IFB1=8 THEN B=1326:D=55
598:GOTO 710
HB 690 IFB1=9 THEN B=1505:D=55
777:GOTO 710
HP 691 IFB1=10 THEN B=1512:D=55
784:GOTO 710
GR 692 IFB1=11 THEN B=1519:D=55
791:GOTO 710
CJ 693 IFB1=12 THEN B=1526:D=55
798:GOTO 710
CE 700 IFB1=13 THEN B=1705:D=55
977:GOTO 710
SC 701 IFB1=14 THEN B=1712:D=55
984:GOTO 710
BF 702 IFB1=15 THEN B=1719:D=55
991:GOTO 710
PD 703 IFB1=16 THEN B=1726:D=55
998:GOTO 710
GX 705 GOTO 320
XG 710 J=0
CX 720 J=J+1:FORT=1 TO6:POKED,
A1(G):POKEB,160:B=B+1:
D=D+1:NEXTT
DJ 730 B=B+34:D=D+34:IF J>3THE
N 750
FC 740 GOTO720
KA 750 A1(0)=A1(B1):A1(B1)=A1(
G):A1(G)=A1(0):G=B1:GOT
O320
XF 760 R=0:IF A1(1)=0 AND A1(2)
=0 AND A1(3)=0 THEN R=
R+1
QB 770 IF A1(5)=2 AND A1(6)=2
{SPACE}AND A1(7)=2 AND
{SPACE}A1(8)=2 THEN R=R
+1
MQ 780 IF A1(9)=6 AND A1(10)=6
AND A1(11)=6 AND A1(12)
)=6 THEN R=R+1
SQ 790 IF A1(13)=5 AND A1(14)=
5 AND A1(15)=5 AND A1(1
6)= 5{2 SPACES}THEN R=R
+1
XG 800 IF R=4 THEN PRINT"
{HOME}{21 DOWN}CONGRATU
LATIONS IT ONLY TOOK YO
U";
EE 810 IF R=4 THEN PRINT TR;"T
IMES TO SOLVE THE PUZZL
E":END
GQ 820 PRINT"{HOME}{22 DOWN} K
EEP TRYING":FORT=1 TO 3
0
AM 830 POKE209,0:POKE210,212:P
OKE211,0:PRINT"0D HU{V}
{RVS}{U}{OFF}@@@@@<U
@*@@@@@0";
RF 840 N=54296:NEXT:POKEN,0:PR
INT"{HOME}{22 DOWN}
{12 SPACES}":GOTO320
PX 850 REM *****
KM 860 REM "{RIGHT}" = RIGHT M
OVEMENT
MK 870 REM "{LEFT}" = LEFT MOV
```

```
EMENT
RH 880 REM "{UP}" = UPWARD MOV
EMENT
AC 890 REM "{DOWN}" = DOWNWARD
MOVEMENT
HK 900 REM "{F1}" = SWITCHES T
HE BLOCKS
PD 910 REM "{F7}" = CHECKS TO
{SPACE}SEE IF PUZZLE IS
SOLVED
SX 920 REM PROGRAM WRITTEN BY
{SPACE}MICHAEL POPE
FC 930 REM *****
RG 1000 DATA 0,2,6,5,0,0,0,1,2
,2,2,2,6,6,6,6,5,5,5,5
,0,0,0,255,255,255
MR 1010 DATA 255,255,255,192,0
,3,192,0,3,192,0,3,192
,0,3,192,0,3,192,0,3,1
92,0,3
JM 1020 DATA 192,0,3,192,0,3,1
92,0,3,192,0,3,192,0,3
,192,0,3,192,0,3,192,0
,3
AQ 1030 DATA 192,0,3,255,255,2
55,255,255,255
```

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## GEOLYNX For C-128

By Stephen Van Egmond

Telecommunication has revolutionized computers. We can send electronic mail across the country at the push of a button; we can chat with hundreds of other people; and we can get to know people without ever seeing their faces.

For some time now, *GEOS* and telecommunication haven't merged well because of *GEOS*' new file format. I imagine that some people have attempted to transfer a *GEOS* file and have been surprised by the fact that most or all of the file has disappeared.

*GeoLynx* converts *GEOS* files so that they can be sent via modem. It doesn't combine files, as the name would seem to imply. I thought it best to leave that to the other programs made to do this, such as *Archive*, *LHArchive*, and the like, rather than make my own compression routine.

The files that *geoLynx* creates are only one block longer than the original ones, and the program works with either *SEQ* or *VLIR* (Variable Length Indexed Record) files. The program can't be used for sending applications by modem for the purposes of pirating because of the *GEOS* serial number copy protection.

## Getting Started

*GeoLynx* is written entirely in machine language. To type it in, use *MLX*, our machine language entry program; see "Typing Aids" elsewhere in this section. When *MLX* prompts, respond with the following values.

Starting address: 0247

Ending address: 1526

After you've typed in the program, be sure to save it before you exit *MLX*. Next, you'll have to convert the program so it will run under *GEOS*. To do that, you'll need a copy of *geoConverter*. *GEOS* users may already have a copy of this utility since we have published it before. You can also find a copy on Gazette's *GEOS Collection* disk. A copy of the program is printed below. It is written entirely in BASIC. To help avoid typing errors, enter it with *The Automatic Proofreader*. See "Typing Aids" again.

When you have both programs on disk, run *geoConverter*. When it asks for a file name to convert to *GEOS* format, give it the filename you used to save *geoLynx*. It will then copy the program and convert it into a file that *GEOS* will recognize. Your new *geoLynx* file will then be ready to use when you boot *GEOS*.

## Using the Program

*GeoLynx* works with any model floppy drive that works with *GEOS*. I don't know of its performance on the *CMD HD* series, but I suspect that *CMD* knew what it was doing when it made its hard drive 100 percent compatible with *GEOS*. *GeoLynx* allows you to enter a description for each file that you pack and displays this description while it's unpacking the file.

After running the program from the deskTop, you are presented with a colored screen with three options: Pack, Unpack, and Quit. The screen is divided into several areas. The middle of the screen is your main work area. Here, you will highlight your files and select different icons to do different tasks. At the bottom left of the screen is an information area that gives you statistics on how *geoLynx* is progressing through your files.

The Quit option takes you back to

the deskTop on the most recently accessed drive. Pack converts a *GEOS* file into a Commodore file. Unpack does the reverse, converting files from Commodore to *GEOS*.

### Selecting Files

After selecting your desired option, you're presented with the files to choose from. If you decide to pack a *GEOS* file, the program will load a list of all the *USR* files on the drive. Since all *GEOS* files are of the *USR* type, you should have no problems. If you decide to unpack files, the directory will be loaded, and all the *PRG* files will be searched for a special *geoLynx* flag in the first block. All files that match this search are listed, and those that don't match are rejected. Only files eligible to be unpacked will be listed; your ordinary files are at no risk, unless they should contain the *geoLynx* flag.

One problem which may result with the Pack routine is that while all *GEOS* files are *USR*, not all *USR* files are *GEOS*. If you should, by chance, happen to pack a *USR* file that isn't a *GEOS* file, then *geoLynx* might complain; if it doesn't, then your program has all the looks of a *GEOS* file.

The current disk name and the amount of room available are displayed in the top window. To select the files you wish to work with, simply click on the needed files in the selection window, toggling them on and off. The window doesn't display all the files. To see more, use the up and down arrows. To cancel your Pack or Unpack choice, use the Cancel icon to return to the initial dialog box.

To move to another drive, use the Drive icon. *GeoLynx* cycles sequentially through the drives that you have connected. To work with another disk, click on the Disk icon, insert a new disk in the current drive, and click on OK.

To have *geoLynx* start work on your files, click on the Go! icon. If you are packing files, you will be prompted to enter a description for the files you highlighted. If you click on Yes, *geoLynx* will pause at the beginning of each file and allow you to enter a text description of it. Enter the description and press Return. If you click on No, *geoLynx* will place the description "Not giv-

en" in each of the files. If you are unpacking the files, *geoLynx* will get to work right away, displaying the description of each new file it works on.

When the operation is complete, you are returned to the Pack/Unpack/Quit dialog box. One final note about the packing operations. For the filename, *GEOS* uses standard ASCII, and the 64/128 uses Commodore ASCII. Standard ASCII lowercase characters can't be accessed when the computer is using Commodore ASCII. To make your life easier, *geoLynx* converts all the characters into *GEOS* uppercase characters, which are considered lowercase in Commodore ASCII.

### Disk Errors

Under normal conditions, *geoLynx* will perform without a hitch. The program checks for disk errors whenever it attempts to write a block to the disk, but it doesn't bother when reading. If a disk error occurs, the entire operation is aborted, all the files are deselected, and you are shown what the *GEOS* Kernel thinks the error is. If the error occurred in a file, then the file is probably corrupt. If you have a disk editor, you may be able to recover the file; refer to the next section for more information on the file format.

### File Format

*GEOS* supports Sequential and VLIR file formats. *GeoLynx* doesn't care which one you are working with. The only difference between the two is that the Sequential files are processed with *geoLynx* considerably faster than VLIR, because every single block of the VLIR file must be visited for accurate information. What follows is a description of what *geoLynx* does to each file type and what's located where.

### Sequential File Format

Block	Index	Description
1		<i>GeoLynx</i> information block, null-filled except for:
	1-2	Pointer to next block.
	3-31	Original directory entry of file.
	64-73	<i>GeoLynx</i> indicator.
	128-	Variable length file description.

2		Original header block.
	1-2	Pointer to first block of the actual program.
3-		The complete <i>GEOS</i> program.

### VLIR File Format

Block	Index	Description
1		<i>GeoLynx</i> information block, null-filled except for:
	0-1	Pointer to next block.
	2-30	Original directory entry of file.
	63-72	<i>GeoLynx</i> indicator.
	127-	Variable length file description.
2		Original header block.
	0-1	Pointer to VLIR record information block.
3		Block with detailed info about records; null except:
	0-1	Pointer to first block of first used VLIR record.
	2N	Length, in blocks, of record #N.
	2N+1	Number of bytes in last block of record #n.
4-		The complete file, with each VLIR record chained one after the other.

From the above table, it's obvious that the *GEOS* Sequential files are not guaranteed to be the exact length after transmission over the modem because of padding brought in by such protocols as XMODEM. Thus, if your files seem to grow by up to 128 bytes each time you transmit them, try a decent protocol or terminal program.

### GEOLYNX

```

0247:5F 03 15 BF 00 00 00 7D D7
024F:FF F8 47 30 CC 6E D7 B4 02
0257:2E F7 B4 2E F1 B4 2E 97 40
025F:B4 2E D7 B4 2F 30 CC 2F 92
0267:FF FE 2E 6A 6A 2F AD B6 B9
026F:6E AD B6 40 89 2A 7F EF D4
0277:FE 00 E8 26 00 9B FA 00 DE
027F:F2 B6 00 02 2E 00 03 62 A4
0287:00 01 FE 83 06 00 00 04 18
028F:FF 03 00 04 67 65 6F 4C 90
0297:79 6E 78 5F 05 00 20 56 B7
029F:32 2E 30 00 00 00 00 53 A1
02A7:74 65 70 68 65 6E 20 56 4F
02AF:61 6E 20 45 67 6D 6F 6E 96

```







```

FF 120 GET#1,K$,V$:IFK$<>CHR$(
71)ORV$<>CHR$(2)THENCLO
SE1:CLOSE15:GOTO220
BR 130 PRINT"{DOWN}DECOMPRESSI
NG...":Z$=CHR$(0):GET#1
,ESC$:ESC=ASC(ESC$+Z$):
AD=SA
RQ 140 GOSUB170:IFV<>ESCTHENPO
KEAD,V:AD=AD+1:GOTO140
PP 150 GOSUB170:CT=V:GOSUB170:
CT=CT+V*256:GOSUB170:GO
SUB160:GOTO140
DH 160 FORI=1TOCT:POKEAD,V:AD=
AD+1:NEXTI:CT=0:RETURN
PK 170 GET#1,V$:S=ST:V=ASC(V$+
Z$):IFST=0THENRETURN
SJ 180 IFS<>64THENGOSUB440:PRI
NT"{DOWN}LOAD ERROR -
{RVS}"EN$ "EM$ET$EE$:G
OTO400
AF 190 IFCT<>0THENGOSUB160:AD=
AD-1
DG 200 PRINT"{DOWN}WRITING..."
:CLOSE1:PRINT#15,"S0:"+
NMS:CLOSE15
EF 210 OPEN1,N,8,"0:"+NMS+",P,
W":FORI=SATOAD:PRINT#1,
CHR$(PEEK(I));:NEXTI:CL
OSE1
GP 220 PRINT"{DOWN}CONVERTING.
...":HD$="":FORI=1TO4:RE
ADHE:HD$=HD$+CHR$(HE):N
EXTI
CF 230 FORI=1TO5:READIE:ID$=ID
$+CHR$(IE):NEXTI
DR 240 NL$="":OPEN15,N,15,"I0:
":OPEN2,N,2,"#"
MM 250 GOSUB410:GET #2,NT$,NS$
:FORE=0TO7:D$=NL$:GET#2
,B$:I=1:IFB$=NL$THEN310
PE 260 IF ASC(B$)<>130 THEN310
AE 270 GET#2,HT$,HS$:I=3:IFHS$
="THENHS$=CHR$(0)
DJ 280 GET#2,B$:I=I+1:IFB$="T
HENB$=CHR$(0)
BM 290 IF(ASC(B$)=160)OR(I=19)
THEN310
SF 300 D$=D$+B$:GOTO280
EB 310 FORI=1TO31:GET#2,B$:NEX
TI:IFD$=NM$THEN340
JX 320 NEXTE:IFNT$=NL$THEN340
CH 330 T$=NT$:S$=NS$:GOTO250
GA 340 IFD$=NL$THENPRINT"
{DOWN}DISK ERROR!":GOTO
400
PD 350 DT$=T$:SS$=SS$:T$=HT$:S$
=HS$:GOSUB410:GET#2,MT$
,MS$:IFMS$="THENMS$=CH
R$(0)
GF 360 FORI=0TO65:GET#2,B$:NEX
TI:GET#2,CT$,GT$:GOSUB4
10:PRINT#2,HD$:GOSUB42
0
RX 370 T$=DT$:S$=SS$:GOSUB410:
FORI=1TO32*E+2:GET#2,B$
:NEXTI:PRINT#2,CT$,MT$;
MS$;
MB 380 FORI=0TO15:GET#2,B$:NEX

```

```

TI:PRINT#2,HT$;HS$;CHR$(
0);GT$;ID$;:GOSUB420
GR 390 PRINTNM$". CONVERTED!"
HB 400 CLOSE1:CLOSE2:CLOSE15:E
ND
DQ 410 U$="U1":GOTO430
CS 420 U$="U2"
PA 430 PRINT#15,U$;2;0;ASC(T$+
"0");ASC(S$+"0"):RETURN
JJ 440 INPUT#15,EN,EM$,ET,EE:E
N$=STR$(EN):ET$=STR$(ET
):EE$=STR$(EE):RETURN
EH 450 DATA 0,255,3,21,87,10,1
,0,0

```

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## HAG

By Bruce M. Bowden

*HAG*, which stands for High-resolution Animation Generator, lets you quickly create your own movies with the 64.

*HAG* combines a set of individual images into an animated sequence or, in other words, combines bitmapped pictures into a movie. The images must be two color and high resolution like those produced by programs such as *The Printshop*, *WorldMap 64*, and *WorldMap 128* (October 1991 *Gazette Disk* bonus). *LISA*, the Little ISometric Artist (January 1992), will also generate images of this type.

To use the images, place them on the same disk and name them SLIDExx, where xx is a two-digit number. The images must be numbered in the desired order: SLIDE00, SLIDE01, SLIDE02, for example. The numbering, however, may begin anywhere.

### Getting Started

*HAG* is written entirely in machine language. Use *MLX*, our machine language entry program, to enter it. See "Typing Aids" elsewhere in this issue. When *MLX* prompts, respond with the following values.

Starting address: 0801

Ending address: 15F8

Be sure to save a copy of the program before exiting *MLX*.

### Making Movies

To run *HAG*, load and run it like a BASIC program. The first prompt asks you

to place a disk containing your set of images in the disk drive 8. It then asks for a starting number, 01-99. An ending number is entered the same way.

Next, you are asked how you want the movie to run. Do you want a straight run from the first image to the last? Or do you want it to oscillate from start to finish and then back down to start? Press S for a straight run or O to oscillate. The graphic screen will appear after this selection, and you can watch as the first image is loaded. After loading, a new text screen will appear for selecting colors. Press a key to return to the picture, and choose suitable background and foreground colors by pressing the 1 (background) or 2 (foreground) keys. After you've made your selections, press Return, and the slides will be loaded, compressed, and merged one by one. The screen is updated as each new slide is appended.

After all of the slides have been loaded, a prompt will appear on the text screen, asking you to insert the disk upon which you wish to save the movie and to enter the movie name. You can abort the process by entering a percent (%) symbol. If you abort the save, you can still run the movie by entering SYS 16384. Vary the speed of the movie with POKE 16384+3, x, with x being any value between 1 and 255.

### Showing a Movie

You can load a saved movie to the same location, 16384 (\$4000), with LOAD "filename",8,1. The advantage of this arrangement is that it allows you to run movies from within a small BASIC or machine language program under the movie data. It may be as simple as 10 SYS 16384:GOTO 10 or as complicated as something that loads several movies and varies the speed according to user input. Each time a movie is run, control is returned to the calling routine. That's the reason for the iterative example above.

If necessary, the calling routine must also recover text mode. This is done, from BASIC, with these three pokes:

POKE 53265,PEEK(53265) AND 223

POKE 53272,(PEEK(53272) AND 260) OR 6

POKE 53270,PEEK(53270) AND 239

# PROGRAMS

Pressing Run/Stop-Restore also recovers from the graphics mode without disturbing the movie code.

If the storage required for the movie exceeds the 64's available memory, loading will stop with a message saying so. In that case, the generator program must be reloaded and an alternative series of images loaded. Choosing a sequential run over an oscillating one will also conserve memory.

## Memory Locations

The loader code resides from addresses 16384 (\$4000) to 16806 (\$41A6), and the movie data is stored from 16807 (\$41A7) to a maximum address of 53247 (\$CFFF). This is 142 blocks, more than 36K of movie storage. The rate of speed at which the movie is run is stored in 16387 (\$4003) and has a default value which is normally adequate. Background and foreground defaults may also be modified by poking the colors to 16390 and 16393 respectively.

Any BASIC program using the movie must set a ceiling for storage at 16384 (\$4000). This is done with POKE 55,254:POKE 56,63:CLR.

## HAG

```
0801:0B 08 0A 00 9E 32 30 36 2E
0809:31 00 00 00 4C F7 08 93 97
0811:0D 0D 0E 0E 05 20 20 20 76
0819:20 20 73 61 76 65 20 4F 9E
0821:50 45 52 41 54 49 4F 4E BD
0829:53 20 41 52 45 20 63 61 0B
0831:6E 63 65 6C 6C 65 64 0D 93
0839:0D 74 48 45 20 4D 4F 56 75
0841:49 45 20 52 45 4D 41 49 9B
0849:4E 53 20 49 4E 20 4D 45 C0
0851:4D 4F 52 59 20 46 4F 52 C6
0859:20 52 55 4E 4E 49 4E 47 19
0861:0D 20 20 20 20 20 20 20 E7
0869:6A 55 53 54 20 73 79 73 E8
0871:20 54 4F 20 31 36 33 38 93
0879:34 20 28 24 34 30 30 30 E5
0881:29 2E 0D 20 20 20 20 20 37
0889:70 4F 4B 45 20 54 4F 20 74
0891:31 36 33 38 34 2B 33 20 86
0899:54 4F 20 56 41 52 59 20 37
08A1:53 50 45 45 44 2E 0D 0D 6E
08A9:20 20 20 63 4F 4E 54 52 BA
08B1:4F 4C 20 49 53 20 52 45 1A
08B9:54 55 52 4E 45 44 20 54 48
08C1:4F 20 54 48 45 20 43 41 03
08C9:4C 4C 49 4E 47 0D 20 20 EF
08D1:20 20 52 4F 55 54 49 4E 16
08D9:45 20 41 54 20 54 48 45 2A
08E1:20 45 4E 44 20 4F 46 20 4C
08E9:4F 4E 45 20 43 59 43 20 32
08F1:45 2E 0D 00 00 00 A9 14 39
08F9:85 FC A9 4B 85 FB A9 40 A5
0901:85 FE A9 00 85 FD A2 15 49
```

```
0909:A0 F2 20 4F 0B 4C 32 12 21
0911:00 00 00 00 53 4C 49 44 C5
0919:45 30 30 30 30 30 31 20 A7
0921:D5 40 20 1C 41 A9 15 85 54
0929:FB A9 09 85 FC A9 0F A2 6C
0931:08 A0 00 20 BA FF A9 07 A1
0939:A6 FB A4 FC 20 BD FF A9 A3
0941:00 A2 00 A0 20 20 D5 FF 33
0949:60 AD 14 09 D0 03 4C 8A BF
0951:09 C9 AA D0 19 20 AA 09 64
0959:AD 1B 09 CD 1D 09 D0 0B C0
0961:AD 1A 09 CD 1C 09 D0 03 78
0969:4C A0 09 4C D2 09 AD 1B E0
0971:09 CD 1F 09 D0 23 AD 1A 78
0979:09 CD 1E 09 D0 1B A9 AA C8
0981:8D 14 09 20 AA 09 4C D2 67
0989:09 AD 1B 09 CD 1F 09 D0 4D
0991:08 AD 1A 09 CD 1E 09 F0 D0
0999:06 20 BE 09 4C 6C 09 A5 EA
09A1:01 09 03 85 01 58 4C 06 37
09A9:0C AD 1B 09 C9 30 F0 04 16
09B1:CE 1B 09 60 A9 39 8D 1B 81
09B9:09 CE 1A 09 60 AD 1B 09 D0
09C1:C9 39 F0 04 EE 1B 09 60 BB
09C9:A9 30 8D 1B 09 EE 1A 09 61
09D1:60 A5 01 09 03 85 01 58 B6
09D9:A9 15 85 FB A9 09 85 FC EF
09E1:A9 0F A2 08 A0 00 20 BA 61
09E9:FF A9 07 A6 FB A4 FC 20 3E
09F1:BD FF A9 00 A2 00 A0 E0 4F
09F9:20 D5 FF 78 18 A5 01 29 9B
0A01:FD 85 01 A0 00 8C 11 09 FC
0A09:AD 1F 40 C9 D0 90 0A A5 E2
0A11:01 09 03 85 01 58 4C FC 9F
0A19:0B AD 11 09 D0 03 8D 19 97
0A21:40 A0 00 AD 1C 40 85 FB 41
0A29:AD 1D 40 85 FC B1 FB 8D EF
0A31:F5 08 AD 1B 40 85 FC AD 69
0A39:1A 40 85 FB B1 FB CD F5 E9
0A41:08 D0 0B AD 11 09 F0 03 5B
0A49:20 9D 0A 4C 75 0A AD 11 1B
0A51:09 D0 14 AD 1C 40 8D 12 8A
0A59:09 AD 1D 40 8D 13 09 A9 79
0A61:AA 8D 11 09 4C 75 0A EE 1C
0A69:19 40 AD 19 40 C9 FF D0 5B
0A71:03 20 9D 0A AD 1D 40 C9 8F
0A79:3F D0 0A AD 1C 40 C9 3F 32
0A81:D0 03 4C F8 0A AD 1C 40 57
0A89:18 69 01 8D 1C 40 8D 1A 14
0A91:40 90 06 EE 1D 40 EE 1B 7C
0A99:40 4C 09 0A AD 1E 40 85 8E
0AA1:FB AD 1F 40 85 FC A0 00 68
0AA9:AD 12 09 91 FB C8 AD 13 C4
0AB1:09 91 FB C8 AD 19 40 91 9E
0AB9:FB 18 69 04 90 03 EE 1F CC
0AC1:40 18 6D 1E 40 8D 1E 40 40
0AC9:90 03 EE 1F 40 18 A5 FB 60
0AD1:69 03 85 FB 90 02 E6 FC 23
0AD9:AD 13 09 18 69 C0 85 FE 84
0AE1:AD 12 09 85 FD AC 19 40 DF
0AE9:B1 FD 91 FB 88 C0 FF D0 60
0AF1:F7 A0 00 8C 11 09 60 AD 53
0AF9:11 09 F0 03 20 9D 0A A0 0E
0B01:00 8C 1A 40 84 FB A9 00 E8
0B09:85 FD 8D 1C 40 A9 20 85 43
0B11:FE 8D 1D 40 A9 E0 8D 1B B8
0B19:40 85 FC A2 FF A0 3F 20 9B
0B21:4F 0B 20 D5 40 20 1C 41 FE
0B29:AD 1E 40 85 FB AD 1F 40 13
0B31:85 FC A0 00 98 91 FB C8 29
```

```
0B39:91 FB C8 91 FB AD 1E 40 5C
0B41:18 69 03 8D 1E 40 90 03 0D
0B49:EE 1F 40 4C 4A 09 8E F6 F5
0B51:08 8C F5 08 A0 00 B1 FB 32
0B59:91 FD A5 FC CD F6 08 D0 67
0B61:08 A5 FB CD F5 08 D0 01 B3
0B69:60 E6 FB D0 02 E6 FC E6 82
0B71:FD D0 E3 E6 FE 4C 57 0B 88
0B79:8E F6 08 8C F5 08 A0 00 6F
0B81:B1 FB 91 FD A5 FC CD F6 35
0B89:08 D0 08 A5 FB CD F5 08 3E
0B91:D0 01 60 C6 FB A5 FB C9 01
0B99:FF D0 02 C6 FC C6 FD A5 35
0BA1:FD C9 FE D0 DB C6 FE 4C 7A
0BA9:81 0B 93 0D 0D 0D 0D 2A
0BB1:20 20 75 68 2D 6F 68 21 2E
0BB9:20 74 48 45 20 50 52 4F 90
0BC1:43 45 53 53 20 48 41 53 62
0BC9:20 42 45 45 4E 20 41 42 35
0BD1:4F 52 54 45 44 0D 20 20 B9
0BD9:20 20 20 44 55 45 20 54 A4
0BE1:4F 20 4C 41 43 4B 20 4F 1C
0BE9:46 20 53 54 4F 52 41 47 68
0BF1:45 20 4D 45 4D 4F 52 59 56
0BF9:2E 0D 00 20 F5 40 A0 0B 69
0C01:A9 AD 4C 84 10 A9 00 8D 5F
0C09:14 09 AD 20 40 C9 FA F0 35
0C11:14 AD 1E 09 8D 1A 09 AD 87
0C19:1F 09 8D 1B 09 A9 FA 8D D8
0C21:20 40 4C 4A 09 4A 10 46
0C29:93 0E 0D 0D 0D 20 70 4C 17
0C31:41 43 45 20 54 48 45 20 D3
0C39:44 49 53 4B 20 54 4F 20 F5
0C41:42 45 20 57 52 49 54 54 F9
0C49:45 4E 20 54 4F 20 49 4E BC
0C51:20 54 48 45 0D 20 44 49 A6
0C59:53 4B 20 44 52 49 56 45 DF
0C61:2C 20 54 48 45 4E 20 45 8F
0C69:4E 54 45 52 20 54 48 45 B3
0C71:20 4D 4F 56 49 45 20 6E 4A
0C79:61 6D 65 2E 0D 0D 20 20 2A
0C81:20 70 4C 45 41 53 45 20 A5
0C89:4E 4F 54 45 20 54 48 41 9F
0C91:54 20 4F 43 43 55 52 52 60
0C99:45 4E 43 45 20 4F 46 20 8F
0CA1:54 48 45 0D 20 20 20 20 51
0CA9:20 25 20 53 59 4D 42 4F 28
0CB1:4C 20 41 42 4F 52 54 53 04
0CB9:20 54 48 49 53 20 53 45 9B
0CC1:4C 45 43 54 49 4F 4E 0D 30
0CC9:0D 00 24 30 00 00 00 00 EF
0CD1:00 00 00 00 00 00 00 00 E9
0CD9:00 00 00 00 00 00 00 00 F1
0CE1:20 AB FF 20 E7 FF 20 F5 6C
0CE9:40 A5 01 09 01 85 01 A9 06
0CF1:82 A0 0E 20 84 10 A9 00 EE
0CF9:8D 69 0E A9 00 8D 24 40 4E
0D01:A9 A0 20 BD FF A9 0F A2 37
0D09:08 A0 0F 20 BA FF 20 C0 0A
0D11:FF A9 02 A0 0C A2 CB 20 82
0D19:BD FF A9 01 A2 08 A0 00 CD
0D21:20 BA FF 20 C0 FF A2 01 48
0D29:20 C6 FF 20 CF FF 20 CF 95
0D31:FF 20 CF FF 20 CF FF 20 AD
0D39:CF FF 8D 67 0E 20 CF FF F3
0D41:8D 68 0E A9 00 8D D3 40 B6
0D49:8D D4 40 AD 67 0E F0 03 9A
0D51:8D D3 40 AD 68 0E F0 03 6A
0D59:8D D4 40 AE D3 40 AD D4 32
0D61:40 20 CD BD A9 0D 20 D2 CD
```





# PROGRAMS

```

13F9:9D A4 13 EE 25 40 20 D2 A6
1401:FF AE 25 40 E0 11 D0 D0 3B
1409:4C 1A 14 C9 0D D0 01 60 0B
1411:C9 14 D0 D4 AD 25 40 F0 FD
1419:BF CE 25 40 A9 20 AE 25 CD
1421:40 9D A4 13 A0 14 A9 2F 6E
1429:20 84 10 4C D9 13 9D 20 BF
1431:20 9D 9D 00 8D 24 40 18 1A
1439:C9 20 90 09 E9 5B B0 05 14
1441:AD 24 40 38 60 AD 24 40 17
1449:18 60 4C 26 40 20 06 07 17
1451:2D 20 62 52 55 43 45 20 EB
1459:6D 2E 20 62 4F 57 44 45 93
1461:4E 20 2D 00 00 00 00 00 5E
1469:00 00 00 00 00 00 00 00 91
1471:20 53 41 20 1C 41 AD 11 FA
1479:D0 29 20 D0 03 20 D5 40 E9
1481:AD 21 40 85 FB AD 22 40 44
1489:85 FC 18 A5 01 29 FE 85 41
1491:01 20 BB 40 A0 00 B1 FB 22
1499:D0 2C C8 B1 FB D0 27 C8 A3
14A1:B1 FB D0 22 20 BB 40 18 66
14A9:A5 FB 69 03 85 FB 90 02 40
14B1:E6 FC CD 1E 40 D0 0F A5 31
14B9:FC CD 1F 40 D0 08 18 A5 38
14C1:01 09 03 85 01 60 A0 00 30
14C9:B1 FB 85 FD C8 B1 FB 85 E4
14D1:FE C8 B1 FB 8D 19 40 18 0B
14D9:A5 FB 69 03 85 FB 90 02 70
14E1:E6 FC AC 19 40 B1 FB 91 36
14E9:FD 88 C0 FF D0 F7 18 EE D0
14F1:19 40 AD 19 40 D0 02 E6 2E
14F9:FC 65 FB 85 FB 90 02 E6 DE
1501:FC 4C 4A 40 EA AD 03 40 5E
1509:8D 23 40 AE 03 40 AC 03 2B
1511:40 88 D0 FD CA D0 F7 CE CF
1519:23 40 D0 EF 60 00 00 AD AE
1521:11 D0 09 20 09 10 8D 11 DF
1529:D0 AD 16 D0 18 29 DF 8D A9
1531:16 D0 AD 18 D0 18 29 F0 FB
1539:09 08 8D 18 D0 18 60 AD 72
1541:11 D0 18 29 DF 8D 11 D0 E5
1549:18 AD 18 D0 18 29 F0 09 4B
1551:06 8D 18 D0 18 AD 16 D0 66
1559:29 EF 8D 16 D0 A9 00 8D E1
1561:20 D0 8D 21 D0 60 AD 04 FA
1569:40 8D 20 D0 A2 04 86 FC 57
1571:A2 00 86 FB A0 00 AD 05 E2
1579:40 0A 0A 0A 0A 0D 04 40 F4
1581:91 FB C8 A6 FC E0 07 F0 61
1589:09 C0 00 D0 F3 E6 FC 4C F6
1591:36 41 8C D3 40 AE D3 40 9A
1599:E0 E8 D0 E4 60 A9 A7 85 55
15A1:FB A9 41 85 FC A9 00 85 C8
15A9:FD A9 20 85 FE A0 00 B1 C5
15B1:FB F0 0E AA C8 B1 FB 88 10
15B9:91 FD C8 CA D0 FA 4C 78 75
15C1:41 60 98 18 65 FD 85 FD 65
15C9:90 08 E6 FE A5 FE C9 40 08
15D1:B0 EF 18 A5 FB 69 02 85 BC
15D9:FB 90 02 E6 FC A5 FC CD 1B
15E1:22 40 D0 0A A5 FB CD 21 C1
15E9:40 D0 03 4C 77 41 4C 63 4A
15F1:41 00 00 00 00 00 00 00 BC

```

Bruce M. Bowden is a programmer at COMPUTE Publications. He lives in Greensboro, North Carolina.

## PEGMAN

By Alain Tremblay

You're in a world that is filling with water. Dripping faucets are everywhere, and it's your job to plug them. Climb ladders to escape the rising flood and leap from ledge to ledge to reach the errant faucets.

*Pegman*, written in machine language, is a one-player game for the 64. To enter it, use *MLX*, our machine language entry program. See "Typing Aids" elsewhere in this section. When *MLX* prompts, respond with the following values.

Starting address: 0801  
Ending address: 1B90

Be sure to save a copy of the program before exiting *MLX*.

### How to Start

*Pegman* loads and runs like a BASIC program. Press the fire button to bring up the first screen after the game loads.

Your task is to plug all the dripping faucets on a given screen. There are ten screens in all (levels 0-9), and they can be played at random. The computer will make the choice, or you can play them in order one after the other. When you are asked if you want to start again after a game, move the joystick (plugged in port 2) left to select random play or right to select sequential play. You may also choose between a fast or slow flooding speed by moving the joystick up or down. Push the fire button when you are ready to play.

### How to Play

Move the joystick right or left to run. To plug a dripping faucet, simply come in contact with it. Use the ladders by moving the joystick up or down to reach higher or lower floors. Simply push the fire button to jump up or push it while holding the joystick in the appropriate direction to jump either right or left. You can jump to grab a ladder or leap onto another floor. Don't worry about falling; you won't lose a life by falling down to a lower floor.

If you fall into the water, you can swim in all eight directions to reach any faucets that happen to be below the surface. Sounds change depend-

ing on whether you are above or below the surface. The only way to get out of the water is to use a ladder.

### Dangers

Once a big fish becomes aware of your presence, he will try to devour you. If you are swimming on the surface, he may bear down on you or leap from the water to get you. You can deal him a fatal blow if you are under him when he falls back into the water. Push the fire button to thrust at him. The timing is critical.

The only other threats to your life are two crabs. You can brush against them, but don't run into them. The ladder-eating snails and the fish that someone keeps tossing at you are harmless, but they can impede your progress.

You earn 20 points for each faucet plugged. After completing a screen, you get points according to the level the flood has reached. You gain an extra life as a bonus for every 1000 points.

After completing the tenth screen on a sequential game, you may continue with random or sequential play and fast or slow flooding speed, just as you did at the start of the game.

## PEGMAN

```

0801:0B 08 0A 00 9E 32 30 36 2E
0809:32 00 00 00 00 20 A1 14 0A
0811:20 F5 0F 20 F1 12 20 1E C8
0819:10 A2 07 A9 00 95 80 BD 6A
0821:17 10 9D 12 D4 CA 10 F3 7B
0829:A9 32 85 81 20 9B 08 A2 85
0831:40 A9 00 9D D0 CF 95 30 C6
0839:CA 10 F6 8E 04 D0 AD 9B D4
0841:0F 29 10 0A A2 0D 69 08 E9
0849:CA E4 83 D0 F9 85 56 8A 92
0851:20 91 13 A5 83 09 30 8D C0
0859:AE 07 A9 CC 8D FB 07 E6 D5
0861:3A A9 C8 8D FD 07 A9 CE F8
0869:8D FC 07 8D F9 07 A9 D0 69
0871:85 55 A9 08 85 52 20 F7 FC
0879:13 A5 08 10 FC A6 81 E0 E4
0881:30 D0 56 A2 0A A0 0E 20 E1
0889:23 15 A2 00 BD CD 08 F0 EA
0891:88 20 D2 FF E8 D0 F5 20 DE
0899:51 0F 20 2F 0F 8A D0 01 52
08A1:60 A5 02 F0 19 10 08 A9 5D
08A9:52 A2 4E A0 44 D0 04 A9 76
08B1:20 AA A8 8D 7F 0F 8E 80 40
08B9:0F 8C 81 0F D0 D9 A5 03 D1
08C1:F0 D8 AD 9B 0F 49 15 8D 45
08C9:9B 0F D0 CB 53 54 41 52 03
08D1:54 20 41 47 01 49 4E 3F BB
08D9:00 A9 50 8D 00 D0 8D 01 96
08E1:D0 A2 00 86 5D 20 08 0F F5
08E9:A5 5D D0 8D 20 14 0E A5 2A

```







# PROGRAMS

low; then type in the remaining lines of code. When all of the data has been entered, save the program with a new name before exiting *MLX*.

Starting address: 0C51

## PADLOCK

```

0C21:4F CD E6 FA D0 02 E6 FB 39
0C29:CA D0 DD F0 D9 20 29 CE 16
0C31:20 42 F1 F0 FB 20 EF CD 45
0C39:A6 FC BD A1 05 20 A8 CE 7E
0C41:9D EF CF CA D0 F4 A5 FC 6D
0C49:A2 F0 A0 CF 20 F9 FD A2 87
0C51:08 20 00 FE A9 01 85 C1 83
0C59:A9 08 85 C2 20 B6 CE E6 85
0C61:AE D0 02 E6 AF 20 EA F5 7D
0C69:A5 90 F0 06 20 BE CD 4C DA
0C71:9D CE 20 78 CE 20 FA CD 52
0C79:B0 03 4C 5D CB A9 0E 8D B8
0C81:20 D0 A9 06 8D 21 D0 A2 A8
0C89:20 BD 73 CF 20 16 E7 CA 80
0C91:D0 F7 A9 47 8D 18 03 A9 36
0C99:37 85 01 60 A9 03 85 D3 0D
0CA1:20 22 CE 20 8E CE A9 08 39
0CA9:20 09 ED A9 6F 20 C7 ED E5
0CB1:A9 00 20 16 E7 20 13 EE D8
0CB9:C9 0D D0 F6 20 EF ED 20 40
0CC1:8E CE A9 64 85 A2 A5 A2 F4
0CC9:D0 FC 4C EF CD A9 20 A2 0A
0CD1:27 9D 48 07 CA 10 FA 60 4B
0CD9:20 42 F1 C9 59 D0 02 18 97
0CE1:60 C9 4E D0 F3 20 EF CD 41
0CE9:38 60 A9 0A 85 D3 20 22 E9
0CF1:CE 20 8E CE A2 12 BD 94 A5
0CF9:CF 20 16 E7 CA 10 F7 60 2A
0D01:A9 15 85 D6 4C 6C E5 A9 DC
0D09:08 85 D3 20 22 CE 20 8E 20
0D11:CE A2 17 BD A8 CF 20 16 D4
0D19:E7 CA 10 F7 60 A6 FB 20 11
0D21:0E F2 20 3E F1 8D D5 08 60
0D29:8D 93 09 20 3E F1 8D D9 C0
0D31:08 8D 99 09 A5 FB 20 91 65
0D39:F2 A9 00 85 B9 4C 33 F3 E8
0D41:A9 09 85 D3 20 22 CE 20 A7
0D49:8E CE A2 13 BD C1 CF 20 98
0D51:16 E7 CA 10 F7 60 A9 07 66
0D59:85 D3 20 22 CE 20 8E CE 34
0D61:A2 18 BD D6 CF 20 16 E7 0B
0D69:CA 10 F7 60 A9 1C 20 16 06
0D71:E7 A9 12 20 16 E7 A9 20 F1
0D79:4C 16 E7 A5 B8 20 91 F2 F2
0D81:20 33 F3 4C 5D CB C9 20 89
0D89:90 07 C9 60 09 20 90 03 D9
0D91:18 69 40 60 A5 AE 8D A8 CB
0D99:08 8D 30 09 A5 AF 8D AE 67
0DA1:08 8D 36 09 A5 4B 8D 5B 4B
0DA9:09 A5 4C 8D 5C 09 A5 26 8C
0DB1:8D 57 09 60 0D 12 0A 0B 5F
0DB9:10 11 11 05 03 15 05 2A 33
0DC1:2A 2A 20 D3 45 43 55 52 F0
0DC9:49 54 59 20 D3 59 53 54 C9
0DD1:45 4D 20 2A 2A 2A 11 11 B5
0DD9:11 11 00 0D D3 4F 55 52 6A
0DE1:43 45 3A 11 20 A3 A3 A3 C1
0DE9:A3 A3 A3 A3 A3 A3 A3 A3 04
0DF1:A3 A3 A3 A3 A3 00 0D C4 71
0DF9:45 53 54 49 4E 41 54 49 14
    
```

```

0E01:4F 4E 3A 11 20 A3 A3 A3 2B
0E09:A3 A3 A3 A3 A3 A3 A3 25
0E11:A3 A3 A3 A3 A3 00 0D D3 A1
0E19:59 53 20 24 11 A3 A3 A3 FE
0E21:A3 00 0D 24 30 30 30 31 C6
0E29:11 20 A3 A3 00 0D C3 4F 8F
0E31:44 45 20 57 4F 52 44 3A C0
0E39:11 20 A3 A3 A3 A3 A3 A3 2B
0E41:A3 A3 A3 A3 A3 A3 A3 5D
0E49:A3 A3 A3 A3 A3 A3 9E 00 B7
0E51:FF 11 11 21 44 52 4F 57 47
0E59:20 45 44 4F 43 20 52 55 E8
0E61:4F 59 20 54 45 47 52 4F FF
0E69:46 20 54 27 4E 4F C4 93 7A
0E71:9A 00 20 4B 53 49 44 20 FB
0E79:45 43 52 55 4F 53 20 54 05
0E81:52 45 53 4E 49 00 20 4B 3D
0E89:53 49 44 20 4E 4F 49 54 C2
0E91:41 4E 49 54 53 45 44 20 A8
0E99:54 52 45 53 4E 49 00 20 0A
0EA1:29 4E 2F 59 28 20 3F 45 E6
0EA9:52 55 53 20 55 4F 59 20 6B
0EB1:45 52 C1 00 20 29 4E 2F AE
0EB9:59 28 20 3F 45 4C 49 46 B8
0EC1:20 52 45 48 54 4F 4E 41 6D
0EC9:20 45 44 4F C3 00 00 00 E2
    
```

## Janus

There are two misprints in the *Janus* program listing (December 1991). In lines 680 and 690, replace each of the { 1 } figures with a comma. □

## TYPING AIDS

*MLX*, our machine language entry program for the 64 and 128, and *The Automatic Proofreader* are utilities that help you type in Gazette programs without making mistakes. To make room for more programs, we no longer include these labor-saving utilities in every issue, but they can be found on each *Gazette Disk* and are printed in all issues of *Gazette* through June 1990.

If you don't have access to a back issue or to one of our disks, write to us, and we'll send you free copies of both of these handy programs. We'll also include instructions on how to type in Gazette programs. Please enclose a self-addressed, stamped envelope.

Write to Typing Aids, COMPUTE's Gazette, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

Gazette is looking for utilities, games, applications, educational programs, and tutorial articles. If you've created a program that you think other readers might enjoy or find useful, send it on disk to

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**Greensboro, NC 27408**

Please enclose an SASE if you wish to have the materials returned.

# ONLY ON DISK

In addition to the type-in programs found in the magazine, here's the bonus program found on this month's *Gazette Disk*.

## Color Isolation Tool

By Bruce M. Bowden  
 Greensboro, NC

Have you ever needed to pick a multi-color image apart? Perhaps certain colors define a specific part of an image which you'd like to isolate from the rest, perhaps for importing into another image. VIC multicolor graphics offer no convenient way of doing this. *Color Isolation Tool* gives you that power.

*Color Isolation Tool* will also give you exceptional power for manipulating the actual color content of multicolor Commodore 40-column graphics images. Each color in an image can be separated and viewed, printed, or saved to disk. When you use this program with a flexible graphics-manipulation program, such as Bowden's *Graphic Assault System (GAS)*, you'll have total control over all your graphic images.

*Color Isolation Tool* supports Koala, *Doodle*, *GAS* compressed/tagged format, and 8K bitmap images.

## Gazette Gallery

Picture of the Month  
 "The UFO"  
 By Jack Modjallal  
 Encino, CA

"Sword" and "Lissa"  
 By Dotan Haim  
 Askelon, Israel

"Golden Age SF"  
 By Vince Zahnle  
 Mt. Holly, NJ

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## AMI PRO 2.0

With the second generation of *Windows* word processors, we're seeing a handful of packages create a new minicategory of software. Products like *Word for Windows* and *Ami Pro for Windows* are much more than traditional word processors, yet they're still less than full-blown desktop publishers. They're document-preparation packages.

The recently released *Ami Pro 2.0* offers significant enhancements on three levels. Power users will likely be pleased with some new sophisticated features like the improved macro language and the addition of power fields. Connectivity needs are better met with this version, too.

If you prepare documents in conjunction with other people, require sophisticated document-merging and revision-marking tools, or need integration with other Lotus products like *1-2-3*, *Notes*, and *cc:Mail*, version 2.0 offers you new capabilities. If you simply want better, faster access to information about a document in progress, tools for dressing it up and making its information more understandable through charts and tables, and customization features that make the program's most often-used functions quickly available, this upgrade offers significantly more power to you.

The cosmetic changes are visible the first time you run *Ami Pro*. Lotus has added SmartIcons, a row of icons that can be placed in different sections of the screen. The default group that comes up includes standards like the spelling checker and thesaurus, the open and save-file commands,

and some font and alignment features (bold, italic, centered). You can change this default set, even replacing the default icons with your own.

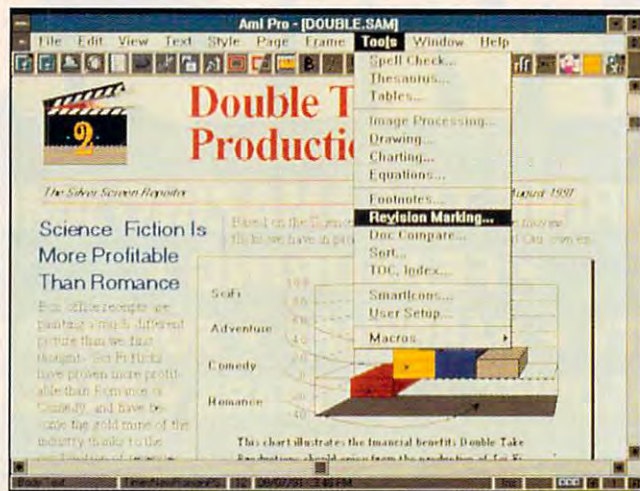
Furthermore, the Style box that once popped out in the upper right corner of the screen whenever you started

gives you an instant picture of the file size and word, page, and character count. (In the previous version, you had to run a spelling check to get a word count.) Unfortunately, when you enter text it still twitches and responds slowly to the cursor, though not as noticeably as

While *Ami Pro's* graphic capabilities don't compare to those of the best desktop publishing packages today, some of the features offered in earlier versions have been enhanced. You have more power to design and add frames, tables, drawings, and charts to your documents. Learning to use the program's tools for these graphics takes some time, but even a novice can start pulling art in quickly. One of the default SmartIcons pops up a list of pre-designed pictures that you can easily pull into your document, or you can import a picture file of your own.

The program also provides some new tools and enhanced features for users who must manage and merge multiple documents, and for those who must mark changes made to a piece. The Master Document feature lets you combine several documents and automates the merge process by, for example, creating one index or one table of contents that covers all of the documents together. Extensive revision-marking capabilities allow changes made to a document after a certain point to be indicated in a variety of ways. The Document Compare feature can blend and highlight changes made by more than one person.

Version 2.0 of *Ami Pro* contains improvements that utilize the real power of *Windows* at the functional level, well beyond the easier user interface. You can open up to nine documents at once within the program and display them in either a cascade or tile sequence, expanding each as you need to make comparisons. And using two *Windows* technologies, Dynamic Data Exchange (DDE) and Object



If you need a high level of sophistication for your documents, *Ami Pro* can give you professional quality.

the program has been reduced to a button found on the new status bar that runs along the bottom of the screen. To change body styles, you pop up the menu. Your current font style and point size appear in two other small buttons along the bar. Clicking on them pops up those menus for a quick change, and, by clicking on another button on the status bar, you can see the current date and time or a running report on where you are in your document (line number, column, and position).

A frustrating omission in the first version of *Ami Pro* was easy access to that last bit of information. A quick word-count function was also omitted. Version 2.0 offers some improvements, including a menu item called Document Information which

in the earlier *Ami Pro*.

As you dig deeper into version 2.0's improvements, you'll find that its increased ease of use and customization abilities, while significantly impressive and substantial, are joined by a spate of new and powerful functional capabilities. Using Outline mode, you can look at a document and see how it's broken down into the nine provided paragraph styles. These designations can be set prior to creating the document or edited after the fact. By specifying power fields (sets of instructions to be carried out at particular points in a file), you can further customize document production and request automatic prompts when information needs to be added or updated, wherever it occurs in the document.





Linking and Embedding (OLE), you can transfer data from *Windows* applications that support those technologies into *Ami Pro* (for example, incorporating spreadsheet data into a report). *Ami Pro 2.0* also ships with *Adobe Type Manager*, a fine font-scaling package.

All these sophisticated functions come at a price: You have to read. You must carefully follow the steps outlined in the documentation or use the help screens. If you're a novice computer user or even a seasoned one who has never used document-formatting and design functions, don't expect to be able to click on a few buttons and experiment your way through these features.

If your word processing needs and software budget are absolutely minimal, then *Ami Pro 2.0* is too much bang for too many bucks. But if you're using an earlier version, or if you need a program that can produce professional-quality documents you design, this upgrade is worth serious consideration.

Minimalists who balk at the idea of experimenting with fonts and graphics should take a look around, but the kinds of documents you can produce with *Ami Pro* are state of the art. If your work is seen by other people in a professional setting or if you mass-produce documents for personal use, your finished products are being held up for comparison with documents that were created using products like this one. You might be surprised at how significantly you can improve the quality of your own work with this program.

KATHY YAKAL

IBM PC and compatibles (80286 or higher, 80386 recommended); EGA,

VGA, or higher graphics card; hard drive with 8MB available and at least 1MB RAM (2MB recommended); *Windows 3.0* or higher; mouse recommended—\$495

Upgrades—\$99; \$49 if earlier version of *Ami Pro* was purchased as of March 1, 1991; \$49 for current owners of *Lotus Manuscript* and *Samna Word IV*. Users of competing word processor packages can purchase *Ami Pro 2.0* for \$149.

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## PANASONIC KX-P2624

Most of us want a laser or ink-jet printer because we enjoy the benefits of reduced noise and dramatically improved print quality. In a bid to compete with the laser and ink-jet printer market, Panasonic has unveiled the KX-P2624 quiet printer.

Aside from some confusion about which paper-installation method to use, it took very little to connect my PC and the KX-P2624. You have to choose where you feed your paper—either front, rear, top, or bottom—and this allows you to place this unassuming hardware nearly anywhere in your office or home. With two of the most popular emulation modes, Epson LQ-850 and IBM ProPrinter X24E, the KX-2624 is compatible with just about any software.

Designed with the consumer in mind, the Operating Instructions manual should answer most questions that arise. The EZ Set operator panel located on the front of the unit offers menu-selectable fonts, pitch, text enhancements, form length, lines per inch, margins, quiet mode, and emulation. You can also install four macros and set

the LCD display in one of five user-selected languages. This panel eliminates the need for DIP switches.

To change the emulation mode from the standard Epson LQ-850 to IBM takes several keypresses. I set up a macro to switch to IBM mode at power-up because I like the more compact print style characteristic of the IBM mode. I needed only a couple of minutes to find the necessary information in the manual, and less than a minute to install the macro.

The KX-P2624 offers 300-cps draft mode and 100-cps LQ (Letter Quality) mode, and it features 40-cps SLQ (Super Letter Quality) mode. To the uncritical eye, SLQ almost rivals laser printer output. Graphics print at 360 x 360 dpi. The voluminous font options include three draft and seven LQ. Under the heading of SLQ, you'll find Courier, Prestige, Bold PS, Script, Sans Serif, Orator, and Roman.

Other features include three individual top-of-form settings, paper park, and an adjustable push-pull tractor feed. An optional 100-sheet cut sheet feeder is available for \$239.95.

The 26K buffer expands to 58K with a 32K chip. You can use either the standard Centronics parallel interface or one of two optional RS-232C serial interfaces.

With the wide carriage width of 16½ inches, you can print on just about any paper. You can also print envelopes or single sheets with the friction feed feature. With SLQ I created wedding and baby shower invitations using *Express Publisher*. The near laser quality output saved money; I didn't need to pay a printing service to print these professional-looking invitations.

Most notable of all the KX-P2624's lovable features is the insignificant noise level of the motor and printhead. In superquiet mode, I didn't have to raise my voice to be heard above the printer. In fact, typing on the keyboard made more racket than the printer.

Based on a consolidated chip design, the KX-P2624 delivers increased speed. The pins fire consecutively, one at a time, to disperse the noise created by their impact. In addition to the chip technology, Panasonic engineers packed rubber around the printhead and cushioned other areas around the printer with sound-absorbing materials.

Available through authorized dealers, the KX-P2624 sells for \$699.95 and comes with a two-year limited warranty for parts and labor. The competitive price, the print quality, and the reduced noise level make this printer a contender in the highly competitive dot-matrix market.

JOYCE SIDES

Panasonic KX-P2624—\$699.95

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Circle Reader Service Number 362

## PUBLISH-IT! 2.0

While desktop publishing packages price themselves right out of the home computer market, Timeworks' inexpensive *Publish-It!* 2.0 proves power doesn't always demand a fistful of dollars. This full-featured and friendly product offers almost every option included in the high-priced and hard-to-use packages.

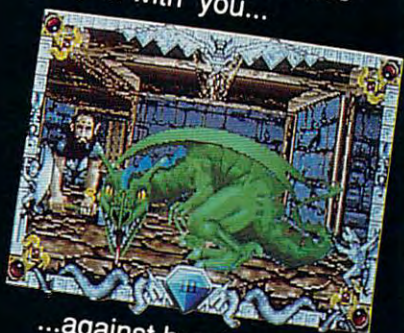
The program runs under the GEM graphics environ-

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ment, and the user interface seems much like most other desktop publishing packages. When you load a file, however, you'll notice a conspicuous difference. *Publish-It!* uses the library concept to list imported text files and graphics. Depending on the current mode (Frame, Paragraph, Text, or Graphics), the contents of the library change. For instance, in Frame mode, only the names of text and picture files used in your work appear. When you activate Text mode, the library fills with text style options.

Version 2.0 introduces many features, including expanded or extended memory support; text autoflow, which adds pages and extends the text to keep the layout intact; and Select All, which selects all the frames on a page.

Another added feature allows you to create your own fonts. *Typografica*, a program included in the package, generates fonts from 6 to 72 points in Sans Serif, Serif, Courier, Symbols, and several other typefaces. Make sure you use the correct printer driver when creating your fonts so that *Publish-It!* can read the new typefaces, though.

Even the best desktop publishers don't always think to stop and save their work when in the heat of the design process. This program's new automatic backup feature ensures your work against power failures. Simply specify a time interval, and the program takes care of the rest—no more disasters!

Draft printing, a feature that I haven't seen in other desktop publishing programs, allows you to inspect layouts without printing graphics. This timesaver gives you a relatively quick

hard copy for proofing and an excellent opportunity to correct typographical errors.

Unlike the previous version of *Publish-It!*, version 2.0 allows you to create custom page sizes when creating a new document. In addition to the standard size, you can create a document up to 22½ inches wide and 22½ inches long.

Not only can you import text and graphics with this version, but now you can export text, too. You can also name text by typing directly into a frame (instead of importing a story). Once you name the text, it becomes a story in the library.

The program supports several new printer drivers, including the Canon Bubble Jet, the NEC Pinwriter series, the Canon LBP II/III/IV series (bitmap fonts), and the Canon LBP III/IV series (scalable fonts). Previously, *Publish-It!* imported ASCII, *WordStar*, *Microsoft Word* 4.0, and *WordPerfect* files. Version 2.0 imports these file types as well as six additional word processor files, including heavyweights like *Microsoft Works*.

*Publish-It!* 2.0 not only includes greater versatility in importing text but also shows a big improvement in importing graphics. The new version imports PCX (*PC Paintbrush*), IMG (*GEM Paint*), GEM (*GEM Draw*), and PIC (*Lotus 1-2-3*) files like the previous version. It also imports LBM (*DeluxePaint*), EPS (*Encapsulated PostScript*), SS (*Splash*), and TIF (*TIFF*) files. Not only has Timeworks improved the import options, but it's also added an additional ruler option and additional text styles such as box and rounded box.

The Online Help option is adequate for simple explana-

tions but not for detailed descriptions. You'll have to look in the well-developed user's manual (which includes a quick-start minimanual) for details.

With the additional features and bonuses (two disks full of design ideas and the *Typografica* program), as well as the speed of this new version (screen redraw is significantly faster than with *Express Publisher*), *Publish-It!* 2.0 is worth a look. The price is right, and the quality of the product is outstanding.

JOYCE SIDES

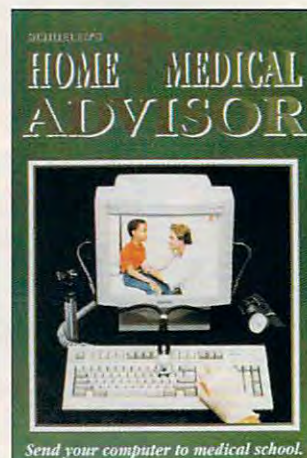
IBM PC and compatibles; 640K RAM; CGA, EGA, VGA, or Hercules; hard drive; supports most printers, mouse highly recommended—\$249.95, upgrade from earlier version—\$49.95, competitive upgrade (submit a page from another desktop publishing package manual or a program disk)—\$99.95

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Circle Reader Service Number 363

## SCHUELER'S HOME MEDICAL ADVISOR

*Schueler's Home Medical Advisor (HMA)* claims to "send your computer to medical school." This program contains an up-to-date, encyclopedic database of information on common symptoms, diseases, injuries, drugs and poisons, and medical tests, with each category of information in its own module. By far the most interesting and useful capability of *HMA* is its medical expert system. Choose a general symptom like back pain, and the program will ask you a series of questions that lead to a specific diagnosis. Did you merely strain your back, or is it a



Consult Schueler's Home Medical Advisor for a quick diagnosis.

kidney stone? (The program warns you six ways to Sunday that it isn't meant to replace the services of a real physician.)

*HMA* is a valuable program, but it has a few rough edges. Sometimes the information isn't organized in the most logical way. For example, the article on AIDS begins with a lengthy discussion of how many people have AIDS or are at risk of contracting the disease and only then gives a definition of the term.

The interface is attractive but a bit awkward. You must scroll through long lists of keywords to find the information you need. (Pixel Perfect is working hard to improve this product, including implementing a way to search directly for text typed into a string gadget.) And *HMA* is copy-protected, which is a mistake. You have to hunt for a manual, find a word, and type it in before getting any information. Of course, I don't like spending an hour in my doctor's waiting room, either.

Overall, *Schueler's Home Medical Advisor* is a good first crack at what in the future will likely be an impor-

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## MEGAFORTRESS

Armchair pilots who feel that getting there is the best part of the journey will thoroughly enjoy *Megafortress*, a remarkable strategic bombing simulation from Three-Sixty Pacific.

The game offers a sense of artistic redemption for designers Rick Banks and Paul Butler, cofounders of Artech Digital Entertainments. The company's two previous titles, *Blue Max* and *Das Boot*, were ambitious failures—thoughtfully planned but poorly executed. Neither simulation proved special enough to stand out in a competitive market.

There's nothing quite like *Megafortress*, however, an air combat simulator inspired by Dale Brown's gripping novel, *Flight of the Old Dog*. According to the story, the *Old Dog* is a heavily modified, 25-year-old B-52 Stratofortress. Engineers at Dreamland—the USAF's top-secret testing facility—used the stripped-down, redesigned craft as a test bed for stealth technology destined for the B-1 and B-2 long-range bombers. Although armed to the teeth, the *Old Dog* was never intended to see combat.

Instead, tragic circumstances force the aircraft into action. Players take full control of the EB-52 Megafor-

tress, so dubbed for its amazing array of advanced ordnance and high-tech defensive systems. It's a daunting challenge but full of reward for those who can handle the pressure.

Sixteen introductory mis-

ceptionally well, thanks in large part to Bruce Maurier's comprehensive 96-page instruction manual.

The EB-52 boasts a payload capacity of more than 50,000 pounds of mixed ordnance. State-of-the-art elec-

mission. The sheer number of interrelated actions is staggering.

The only thing more sensational than the game's eclectic avionics is its flawless execution. With *Megafortress*, Three-Sixty Pacific finally has an air-combat simulator to be proud of.

SCOTT A. MAY

IBM PC and compatibles, 640K RAM, VGA, 1.2MB 5¼-inch floppy drive, hard drive; 12 MHz or faster recommended, mouse recommended, supports Ad Lib and compatible sound boards—\$59.95

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Circle Reader Service Number 365



The Old Dog, an updated B-52 and namesake for *Megafortress*, has learned new tricks for riveting air-combat simulation.

sions offer hands-on training in such essentials as navigation, radar evasion, in-flight refueling, MiG defense, and precision bombing. Seasoned fliers can then test their mettle in 12 tough Persian Gulf scenarios. It all comes together in one final, tremendous mission: a spine-tingling re-creation of Brown's novel. Whoever walks away intact from this assignment deserves more than a victory screen.

Players are required to wear many uniforms in the game: pilot, copilot (flight engineer), navigator, and electronics warfare and offensive weapons officers. The bomber's five stations are rendered with exacting detail in 256-color VGA. Dozens of dials, displays, gauges, knobs, buttons, and switches—all completely operational—fill each screen. What could easily result in sensory overload flows ex-

tronics assure that the goods are delivered and the crew returns intact. Among the equipment you must master: terrain avoidance computers, satellite communications, "active" attack radar, an electro-optical guidance system, and numerous electronic countermeasures.

Success in the game demands not only a thorough understanding of all on-board systems but also a feel for the in-flight routine. The nature of the simulation dictates that much time be spent in mission planning, aircraft management, and electronic analysis. Although this sounds rather passive, the program evokes incredible atmosphere. Nervous anticipation explodes in a real-time flurry of activity. From last-second jamming of incoming missiles to the rerouting of burned-out hydraulic pumps, every action contributes to the success of the

## IDEAFISHER

Creative thinking involves not only a goal but also a large amount of healthy mental rambling—a loose, idiosyncratic juggling of words and concepts that you hope will connect to form an actual idea. But the routine of a job doesn't encourage rambling, and if your education has been overly specialized, you may simply not know enough about things even to see the connections. What you need to get creative is a good jolt of lateral thinking—something to question your assumptions, cut through routine thought, and get you back to the fundamental questions about your work. What you may need, in fact, is *IdeaFisher*.

Developed by Marshall Fisher (cofounder of the Century 21 real estate company), *IdeaFisher* is based on the theory that the process of listing and associating ideas helps to stimulate the "Eureka!" or "Aha!" response—the moment of illumination, discovery, creation. To this

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end, *IdeaFisher* has been designed as, essentially, an electronic brainstormer, a 7MB program containing more than 60,000 words, phrases, and concepts that are extensively cross-referenced to form what is, at the very least, one heck of a thesaurus. But *IdeaFisher* also contains about 3,000 questions that cross-examine your project's aims and assumptions, inviting you to think more clearly about what you want to do and how you intend to do it.

Suppose you want to develop a new product or service or to devise an advertising strategy—or even to write a story. The first step is to jot down your ideas on the Idea Notepad, a basic word processor built into *IdeaFisher*. The more specific your ideas, the more *IdeaFisher* will be able to serve you—and its Qbank can help sharpen your concept. Pull down the Qbank menu and select Orient-Clarify. The Qbank will supply a number of basic questions regarding the aims of your project. For instance, it will ask storywriters, "Are you keeping thesis/antithesis/synthesis in mind? Are your characters' motivations clear?" For people in marketing: "Who is your target audience? How will your product appeal to them? How do you know this?" Answer the questions you think appropriate, and then *IdeaFisher* will examine your answers, produce a list of your key words and concepts, and append them to your Idea Notepad.

After returning to the notepad, you can place the cursor beside any of the words or ideas you want to consider in more detail, and *IdeaFisher* will go to its Ideabank to provide further lists of words or ideas relat-

ed to your list—sometimes related in ways you hadn't imagined—any of which may be copied back to the Idea Notepad. If you'd like to see how two concepts relate to each other, you can use the Compare function to produce even more words and ideas to work from. As you work on your project, you can return to the Qbank for further questions that help you to clarify or modify your aims—or you can personalize *IdeaFisher* by adding your own questions, words, and key concepts that relate more directly to your specific project.

Don't expect *IdeaFisher* to assimilate everything, mull it over, and get back to you with the Answer to Your Problem. *IdeaFisher* doesn't pretend to solve anything. What *IdeaFisher* does do is to help you make creative associations far more quickly—and perhaps more extensively—than you might make by yourself. You might not know enough about literature, popular art, religion, and sports to imagine how Dorothy and Toto, the Harlem Globetrotters, Garrison Keillor, Nirvana, and Beaver Cleaver could be conceptually related, but *IdeaFisher* knows and can help you track them down. But the final creative leap—the "Aha!" of recognition or insight—has to be your own, as it should be.

Although the Qbank questions suggest that *IdeaFisher* was chiefly designed with product development and marketing in mind, its range of possible uses is much larger, including story development, speech writing, and general problem solving. *IdeaFisher* also has an engaging fiddle-around factor, luring you to browse through the Ideabank's collection of words, phrases, and key con-

cepts, so that it's possible to begin with, for example, the word *turtle* and follow a trail leading through fiber optics, body language, the Mohs scale of hardness, and the sound of high heels. You may begin to suspect that the Unified Field Theory—Einstein's elusive, long-sought key to the mysteries of the universe—is lurking in there somewhere.

One friend commented that *IdeaFisher's* biggest drawback is its 7MB of disk space; others might blanch at *IdeaFisher's* list price of \$595 (the Strategic Planning Module, containing further questions for the Qbank, is \$99 extra). True, few people will purchase *IdeaFisher* as a toy for idle moments, but professionals in various fields might find *IdeaFisher* well worth the investment. And as a partial substitute for or supplement to a liberal education, *IdeaFisher* is certainly inexpensive.

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## TONY LARUSSA'S ULTIMATE BASEBALL

SSI pops one over the fence with *Tony LaRussa's Ultimate Baseball*, an impressive rendition of the national pastime that lives up to its lofty billing. The game is the culmination of a 20-year dream for Don Daglow, head designer and cofounder of Beyond Software. In 1971, Daglow created the first full-season major

league baseball computer simulation. Thanks to advanced technology and countless refinements, what originally required a mainframe computer can now be experienced on your PC. Backed by some of the best programmers in the league—not to mention Oakland A's manager Tony LaRussa—Daglow's dream has blossomed into one of the most versatile sports games on the market.

Hardball veterans will notice similarities between this game and Electronic Arts' *Earl Weaver Baseball*. Daglow, who produced that award-winning title with designer Eddie Dombrower, has expanded many of its innovations in his latest work.

Among the most noticeable improvements are the stunning VGA graphics. The action unfolds in a closeup view from behind home plate, affording both the pitcher and batter a clear view of the strike zone. The pitcher's set, windup, and delivery are perfect examples of the entire team's fluid animation. Almost every detail imaginable is here, including runners sliding into base, infielders jumping or diving for the ball, and outfielders making spectacular over-the-shoulder catches. Kudos go to animator David Bunnett (*Typhoon Thompson*) for bringing the game to life.

Other terrific features include a split-second delay after a hit, allowing the defense to get its bearings. The designers also fashioned an ingenious 3-D method of tracking fly balls; fielders converge on a circular white shadow, its size a reflection of how high the ball is in the air. Unlike previous efforts in the genre, this game makes the ball's flight path appear to be genuinely random, af-



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Managers command total control of their teams, including defensive assignments, pitching rotations, batting lineup, and on-field signal calling. In addition, injuries, fatigue, and cold streaks bring substitutions into play. Decisions are made quickly via pop-up menus and bullpen screens.

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Baseball number-crunchers will revel in the game's seemingly endless statistical reports, including 14 categories for fielding, 49 for batting, and 44 for pitching. A mammoth Statistical Leaders database analyzes, sorts, and displays both real-life and simulated player stats in more than a dozen different categories. The program encourages multiplayer leagues by offering drafts, trades, and comprehensive team editing.

Extensively detailed yet instantly accessible, *Tony LaRussa's Ultimate Baseball* represents a major achievement in sports simulations that no true baseball fan should be without.

SCOTT MAY

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## MICROSOFT PRESS COMPUTER DICTIONARY

When Microsoft publishes a 400-page computer dictionary, you expect it to be better than good. Just as an academic dictionary that includes the name of Oxford or Harvard in its title is likely to be an authoritative resource, a computer dictionary with Microsoft's name creates certain expectations.

Fortunately for all concerned, Microsoft has produced the definitive computer dictionary. Compared to other computer dictionaries and glossaries, *Microsoft Press Computer Dictionary*

(*MPCD*) is much more thorough and readable. It is so readable, in fact, that I enjoyed casually browsing its pages, stopping on unfamiliar terms such as *burst speed*, *ping pong buffer*, and *session layer*. I was also impressed by the distinction made between *baud rate* and *bits per second* (they're not always the same) and the multiple definitions for such words as *path*, *address*, and *format*.

Most of all, I enjoyed my chance encounters with examples of computer slang, including *kludge* ("a piece of hardware or software that basically operates properly, but whose construction or design is severely lacking in elegance or logical efficiency") and *liveware* ("Slang for 'people.' Also called wetware or jellyware, as opposed to hardware, software, and firmware").

As good as *MPCD* is, it's not perfect. Under *animation*, the definition lists the frame rate of film animation as 28 fps—it's actually 24 fps. And there are too few illustrations. Maybe Microsoft could go in with Time-

Life for the definitive computer encyclopedia in 12 monthly volumes. Until then we'll have to settle for what is clearly a must-have computer resource.

DAVID ENGLISH

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## TANDY DMP 202

Ever wonder if we'll see the end of the dot-matrix printers? Tandy seems intent on continuing tradition, and with the DMP 202 the company delivers a machine that closely resembles some of its early ancestors.

With two buttons to handle simple printer functions, a very plastic—but low-profile—look, and a compact footprint, this unit projects an attitude of low-end, can-do printing.

Emulating an IBM X24 printer, the Tandy DMP 202 handles both graphics and text from the *Windows* environment without complaint and does more than a fair job when you try its hand at DOS-based desktop publishing packages such as *Express Publisher*. Unlike early 8-pin models, this 24-pin printer can produce high-quality work, including near letter quality text. Print speeds clock in at 180 cps in the superspeed mode, bottom out at 33 cps for near letter quality work, and stabilize around 120 cps in standard draft mode.

As always, it's relatively easy to run paper through the tractor feed; it's the more than occasional jams that give you the headaches. Still, unlike some high-end dot-matrix printers, this Tandy printer never attempted to

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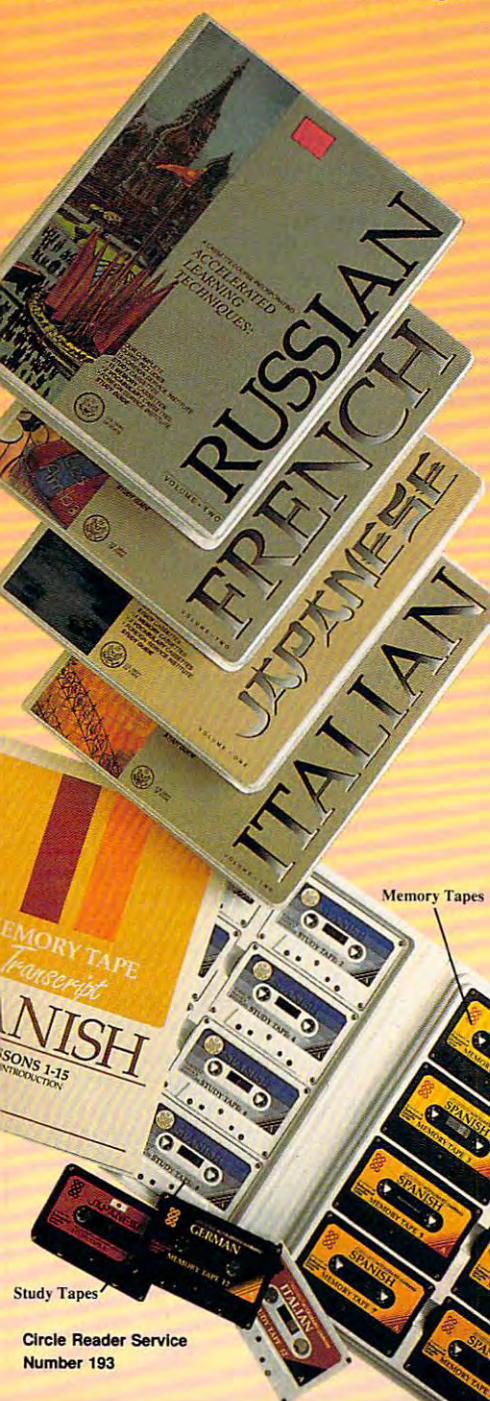
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route paper incorrectly through its insides in a spiteful ploy to cause trouble. The single-sheet paper rack allows for trouble-free printing on either typing paper or stationery.

Not the fastest printer around but one of the lighter ones at 7.3 pounds, the Tandy DMP 202 could make an ideal companion for college-bound students worried about dragging their possessions up four flights to the dorm room. In the home office, on the other hand, the DMP 202 could see some action printing multipart forms.

The noise-sensitive, however, must stand clear. Like its forerunners, the DMP 202 becomes an irritating noise monster when it prints.

Aside from this failing, users who need only a moderate amount of printing done could find the DMP 202 a tolerable balance of quality output, print speed, and price. If this unit turns up in the Radio Shack sale catalog, you might consider picking one up.

DAVID SEARS

Tandy DMP 202—\$399.95

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## I HATE ALGEBRA

A spreadsheet for people who don't understand spreadsheets? Can there be such a thing?

If the name *I Hate Algebra* appeals to you, this product could add up to be just what you need to replace your confusing, algebraically driven spreadsheet.

How does *I Hate Algebra*

outmaneuver the tried-and-true construct-a-formula method so familiar to spreadsheet users? The program attempts to automate the paper-and-pencil approach to arithmetic that we all learned way back in grade school.



*It looks plastic and makes a racket, but the Tandy DMP 202 gets basic printing jobs done.*

You place symbols such as + and - next to empty cells, with = before the cell where you wish a total to appear. These symbols make up calculations (as opposed to formulas) and remain independent of the cells that contain numbers, so you can apply them to different rows—a nice feature not found in most spreadsheets.

This straightforward approach will please users that need small spreadsheets to manage their finances—a small business or a household budget, for instance. Financial analysts, on the other hand, won't find much use for *I Hate Algebra* because of the algebra-intensive nature of their work.

A *Windows* program, *I Hate Algebra* comes on both sizes of floppy disk, and it stores its files in a simple ASCII format. The manu-

al is quite usable, thankfully, since *I Hate Algebra* offers no online help. You cannot import files from other spreadsheets (a feature handy for those of you who want to make use of spreadsheet code that's in

the public domain).

Are the standard spreadsheets *I Hate Algebra* aims to replace really so difficult to learn, however? Considering that a good 10 million of them have been sold—the vast majority to nonprogrammers—probably not.

We even credit spreadsheets with virtually creating the PC industry by bringing micros to the desktops of bean counters everywhere, and because of this I think *I Hate Algebra* might be a solution in search of a problem—or perhaps just a solution with a limited audience.

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## PERSONAL PRO

If you've ever visited a seasoned golf pro for lessons or help with your game, you undoubtedly received a lot of advice on the technical details of swinging a golf club. Now you can get the same kind of detailed, specific help from your personal computer. MicroLeague Sports' *Personal Pro*, a rule-based system developed by expert golf instructors, analyzes your swing problems and gives you specific steps to cure them.

*Personal Pro* consists of two main modules—the swing consultant and the animated diagrams. The swing consultant lets you select from 11 typical problems, including topping, slicing, hooking, skying, hitting fat (hitting the ground before the ball), and shanking.

If, for example, your problem is a persistent slice, you'll answer a dozen or more questions. After a few seconds, checklists for addressing the ball, backswing, downswing, and follow-through appear, giving you suggestions to solve your problem.

Each checklist item has two screens. The item description screen offers a thorough explanation. For example, one item tells you to hold your chin higher. The description consists of a paragraph explaining head, neck, and spine position.

The item drill screen requests that you perform a quick, practical physical activity to test the area of your golf game in question. For example, to check whether you're staying level on your backswing, *Pro* suggests tying a weight on a string to your shirt button so the weight rests lightly on the ground as you normally address the ball. Then, it in-



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structs you to do your normal backswing. If the weight rises or if the string touches the ground, you aren't staying level during your backswing.

After working through all the suggestions, descriptions, and drills, you can print out a summary of the advice you've received. A sample checklist for a duffer addressed three main faults, six added points of emphasis, and two additional items. Even with all this advice in hand, you may still have trouble visualizing the problem and its correction. The animated diagrams take over here.

Although the rest of the graphics are simple, the developers have animated actual photos of a golfer making the errors you need to avoid along with corrected swings. The animation—and indeed the whole program—requires some effort on your part, though. Intended for serious golfers, *Personal Pro's* advice helps only when implemented.

You may need to take this a step at a time. Trying to keep your back upright, chin up, neck unbent, and knees flexed with weight evenly on the insides of your feet while turning your right shoulder more to the right, maintaining a constant spine angle, clearing your left hip to the left, fully uncocking your wrists at impact, and keeping your chest down . . . well, it's hard to do it all at once.

Let's apply a little rule-based artificial intelligence of our own here. Are you serious about golf? Do you have swing problems you'd like to cure? Are you willing to work for the cure? If your answer is yes to one or more, enlist *Personal Pro* as your personal trainer.

RICHARD MANN

IBM PC and compatibles; 256K RAM for text only, 360K for EGA, 512K for VGA—\$49.95

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another environment, such as *GeoWorks Ensemble*, you'll also be pleased with the notebook's performance.

The system I reviewed shipped with DOS 5.0, which, when combined with *Windows*, formed the basis



The high-powered, aptly named *Kris Master* makes it easy for you to take your office on the road.

## KRIS MASTER

Sleek, fast, powerful, responsive—all suitable adjectives for this 7.1-pound 386SX notebook from Kris Technologies. From the sharp charcoal-gray housing to the agile keyboard to the powerful and functional 20-MHz processor, this machine is everything you might want or need when you take your office on the road.

Underscoring this conclusion is the *Kris Master's* inclusion of *Windows 3.0* and a Logitech serial mouse. This notebook certainly has the muscle to run *Windows*, if that's the environment you've chosen for your applications. It goes without saying that it's suitable for straight DOS applications. If you've chosen

for a powerful mobile office. I added *Ami Pro* and several DOS-based applications, including *XyWrite*, a contact manager called *Maximizer Lite*, *GrandView*, *Quicken*, *The Norton Utilities*, and a few others. All my applications performed as well as or even better than they do on my home office system, a 16-MHz 386SX.

Other system specifications include a backlit VGA-compatible display with 640 × 480 resolution in 16-shade gray scale, a high-density 3½-inch floppy disk drive, a socket for a 387SX math coprocessor, a hard disk (20, 30, 40, or 60 megabytes), two serial ports and one parallel port, and a PC-compatible keyboard with embedded keypad. I found the

display quite clear and the keyboard comfortable and responsive. I did wish for a trackball or similar pointing device—I swapped the Logitech serial mouse for a MousePen Pro from Appoint because it's much more portable. Topping off the system is a nylon carrying case—a nice touch, even though the bag isn't large enough to hold the Master and the AC adapter unit at the same time.

Installation of a fax/modem card took five minutes and couldn't have been easier. With the extraction of one screw and the removal of a cover, the receptacle was in view. The small 4 × 4 inch card eased snugly into the socket, and the provided screw held it in place. After replacing the cover, I was in business.

The 2400-baud modem worked like a charm. I did have to run the setup program to turn it on, but that illustrates one of its strong points—you can turn it off to save power. A fax/modem card works wonders while on the road to keep you in close touch with your office and help you communicate with associates.

The purpose of a notebook, of course, is to take all of this technology on the road. The *Kris Master* draws portable power from a rechargeable ni-cad battery rated at 2½ hours of operation, depending on the power-saving features you've enabled. When the battery is fully discharged, a fast-charge feature allows you to charge the battery pack in 2½ to 3 hours, also depending on the power-saving features you've enabled. I found that the system lived up to both of these claims. Note, however, that the battery charges only when the computer is

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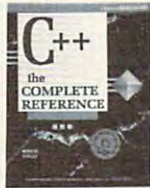
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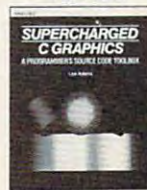
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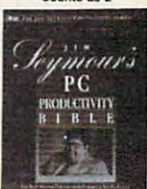
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turned off—it doesn't charge while you're using the computer from an AC power source. The battery-charging indicator lights are located on the AC power adapter unit rather than the computer itself.

As previously mentioned, you can extend the Master's battery operation by enabling a host of power-saving features. While enabling these features makes power management an automatic function, there's also a manual power-management technique that makes use of the suspend-resume switch located just above the keyboard on the right, next to the on-off switch. By pressing this button, you can suspend all computer operations—disk access, screen display, and so on. While in the suspend mode, your work is maintained in memory. Pressing the button again awakens the notebook and returns you to where you left off. The power LED below the screen blinks green when you place the system in suspend mode. I used the suspend-resume feature anytime I paused my work while running off battery power, and it added noticeably to the unit's battery life.

You can access the automatic power-saving features through the Setup screen by pressing the Ctrl-Alt-S key combination. The setup program consists of three screens, which you page through by pressing Fn-PgDn. The first page displays basic CMOS data such as time, date, disk type, memory setup, CPU speed (fast or slow, but there's no reason to set it at slow unless your application requires it), and the initial state of the video display.

The second page of the setup program contains the

computer's memory map. Although the screen displays a detailed map of the computer's memory allocation, the only areas you should concern yourself with are the Shadow BIOS ROM and the 640K-1MB Relocation (you can enable or disable either or both of these). Enabling the Shadow BIOS ROM will speed up the computer's performance. Enabling the Relocation option maps all unused memory found between 640K and 1MB as extended memory. The Kris Master ships with 2 MB of memory in its standard configurations; enabling this feature will give you even more extended memory for your applications.

The third page of the setup program lets you set the computer's power-saving features to the most effective setting for your travel use. The hard disk, LCD display, and suspend mode features can all be set to take effect in 1-minute increments up to 15 minutes (you can disable the hard disk-saving feature by setting the time increment to 0). Doze mode, which controls the main CPU, can be set to take effect in as little as 1/8 second. Sleep mode, which controls the peripherals, can be set for between 1 and 15 minutes.

Despite the flexibility and power of this notebook, there are some curious oversights. For example, neither of the small manuals lists a technical support number or even a main company number. I had to call directory assistance to track down Kris Technologies. My call was precipitated by another omission from the documentation—there was no explanation of how to access the setup program, though the explanation of the program and tips on optimum use

were well written and clear.

Power users may shrug off these omissions and look to the Kris Master for its solid performance and speed. On that level, the Master gives all you'll need in a powerful notebook configuration—even if you keep it on your desktop.

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## GRANDVIEW 2.0

From its inception as an outliner and personal information manager, Symantec's *GrandView* 2.0 has successfully garnered faithful followers who use its tools for tasks ranging from personnel management to brainstorming. Count me among those who have found the program's unique blend of outlining, categorizing, and printing to be a worthwhile addition to the desktop—even if these same tools can now be found in spreadsheets, word processors, and other productivity applications.

In its latest incarnation, *GrandView* emerges as a full-blown project management tool, minus the Gantt charts and other features that many managers find too complex or rigid to use in managing day-to-day affairs at the office.

The program's many new features could easily fill a book. (Actually they fill two—a Reference Guide and a User's Manual—and a couple of topic-sensitive booklets:

one detailing *GrandView*'s use as a presentation tool and the other a well-designed guide to using the program's most effective features.)

The latter booklet is an excellent introduction to the program, and I recommend it highly to all users—no matter how familiar they are with the program's earlier version. By presenting the program's features as a step-by-step guide to productivity, Symantec effectively conveys the power that lies in this tool.

Whether you're managing a to-do list or a complex project, *GrandView* gives you just what you need to track important tasks, assign responsibilities, make reports, and present ideas. Tasks, ideas, people, and dates can be linked in a variety of ways to give you the flexibility and the insight necessary for effective management.

One particularly striking feature about this version of *GrandView* is its expanded presentation and display. With version 1.0, users could view tasks by category, by people, and by date. But the design of the software didn't capitalize on those links—you had to do a lot of the connections by yourself. In 2.0, *GrandView* makes better use of the computer's ability to balance disparate bits of information and then presents that information in ways that make more sense or that provide a new perspective.

As an example of how *GrandView* juggles all of this information, look at how you can use the program to manage a project. First, use *GrandView*'s excellent outlining features to define the separate tasks that go into the project. Then, group tasks together by common features—some may be the re-



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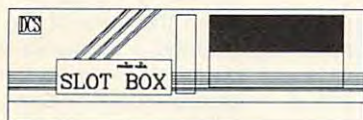
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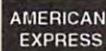
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sponsibility of the marketing department, for example, or some might be consigned to customer service.

You can rearrange the tasks and the rest of the outline material quickly and effectively with the program's various editing commands. Once you've completed your outline, you can proceed to assigning each of these tasks to a person, giving each task a priority and a due date.

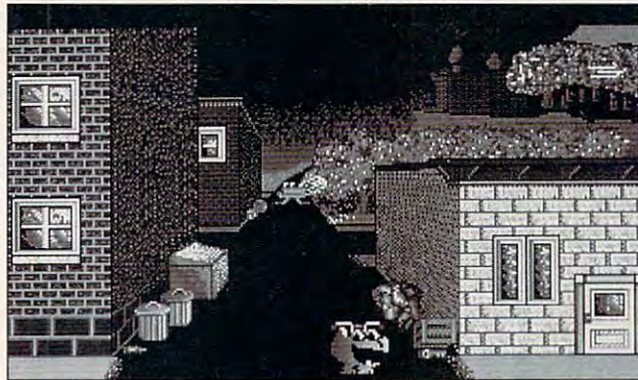
From here on, you can check the status of the project and communicate necessary information about it from within *GrandView*, using separate views to investigate your assignments and writing summary reports using the program's templates.

The templates are a fine addition to this already excellent program. New users can get immediate results from using them; experienced users will find that the template designs suggest different ways of using information.

*GrandView* isn't without its faults, however, and chief among them is the interface design. Rather than adopt the now-almost-standard DOS-specific technique of granting access to the menu bar through an Alt-key combination (such as Alt-F for the file menu), Symantec insists on using the F10 or backslash keys to activate menus. Few programs use this interface anymore, although those few are well known (*Lotus 1-2-3* and older versions of *The Norton Utilities*, for example). In this GUI world, when it seems that the entire software industry is racing away from DOS applications, it makes better sense to design a consistent interface so that users who haven't opted for *Windows* will at least not have to re-educate

their fingers when it comes to using a keyboard.

Effective project management, no matter what the scale or variety, is key to effective and creative work.



*This happy Muncher—one of many to be found in Super Munchers—must know its facts and avoid the Troggles.*

With its emphasis on outlining and its support structure of categories, priorities, and responsibilities, *GrandView* can manage the information you need to get the job done right.

PETER SCISCO

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## SUPER MUNCHERS

*Super Munchers* offers fast-paced, arcade-style family entertainment in the classic *Pac-Man* tradition—but with a brain-teasing twist. You move a friendly animated character known as a Muncher around an electronic game board, gobbling up words that match a target rule. You earn points for each correct item munched, but you lose a

Muncher if you chomp down on an object that doesn't fit the rule. The game ends when no reserve Munchers are left for board duty. High scorers earn a place of honor

in the *Super Munchers* Hall of Heroes.

Five types of Troggles, or Muncher-gobbling meanies, make life difficult for morsel-masticating Munchers. Troggles pop up onscreen at random locations and devour unsuspecting Munchers on contact. The higher the level of gameplay, the greater the Troggle menace. Munchers find temporary relief in Troggle-repelling Safe Zones, which Troggles can't enter.

To spice up the action, a special transformation cell appears whenever Munchers chow down on 20 correct items in a row. If players direct their Munchers to this cell, their game pieces change into Super Munchers! Super Munchers have 20 seconds to earn bonus points by trouncing every Troggle in sight. They earn extra super time if they chomp down on correct items as they navigate the board. As an added treat, after every three levels of play, players get to help Super Munchers on a special problem-solving mission.

*Super Munchers* is a terrific computer game because success requires more than just hand-eye coordination. Players also have to think. How well you do depends upon your ability to identify, classify, and categorize. The package features six major subject areas: Animals, Famous Americans, Food and Health, Geography, Music, plus Odds 'n' Ends. Each topic, in turn, has several target rules for a total of 150 categories (twice that many if you include negotiations). If you're looking for the ultimate in mind-building challenges, *Super Munchers* is a gaming enthusiast's dream come true.

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## MIDWINTER

Mother Nature has delivered a premature ice age in response to global warming. When the level of the seas dropped, a submarine mountain peak emerged from the depths to form the frozen island you now inhabit. You are Captain John Stark, a peace officer, and you have just gone out on patrol.

While you're on patrol, the evil General Masters and his personal army begins to occupy the southeastern tip of your island. His troops push north and west to occupy the mines that bring the heat of the earth's magma to the surface and make life possible on the frigid planet.

As Captain Stark, you



must find allies and recruit them to your cause. Place good skiers in snow vehicles in a defensive line across the southeastern part of the island. If that line holds, you'll have a slim chance of reclaiming the island by destroying the invading forces.

Much in *Midwinter* depends upon chance. Chance determines both your position and that of the enemy at the beginning of the game. Should you begin play in a very remote area, you'll have little chance of winning the game. Should you fail to quickly establish a strong defensive line of snowmobiles, or if they don't hold off the advancing army, again, you'll fail.

Roam the fractal-generated, 160,000-square-mile, 3-D polygon-filled landscape and enjoy a variety of heads-up winter sports. You can hang glide, ski, snowmobile, or travel by cable car. You can blow up buildings or practice your marksmanship. It makes you wonder if the designer—Mike Singleton of the United Kingdom and Rainbird—decided in midproject to move a Winter Olympics game closer to role-playing territory.

The interface allows for joystick, mouse, or keyboard control. Only the mouse lacked the precision to control the various icon-driven features of the game. A heads-up display with the center of the screen cut to resemble the view through snow goggles or the windshield of your vehicle adds somewhat to the feeling of being there. While you're skiing or hang gliding, the body-heat icon is the most important, since you can freeze to death in the -25-degree temperature. When you're traveling by snowmobile, the most important icons are the gas gauge and the angle of the



What's that "Star Trek" prop doing here? Oh, it's the DATALUX MX LCD monitor, with 16 shades of gray and no eyestrain.

slope. Snowmobiles turn over when the slope is too steep.

Here, as in a role-playing game, each of the 32 nonplayer characters has attributes that determine performance, proficiency, and speed at a number of crucial tasks. The attributes don't appear to change through the course of the all-too-quick game.

Ultimately, *Midwinter* proves perhaps a bit too challenging. The characters don't seem to work well together, and success depends upon chance rather than strategy or good gameplay. When I finally called the MicroProse support line for help with the game, I was told that *Midwinter* was a UK product and I would have to call them for support.

While I enjoyed skiing, snowmobiling, and hang gliding, I recommend *Midwinter* only to the most skilled gamers. After a time, the difficulty will overpower the value of the game's realism and leave you cold.

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## DATALUX ML LCD MONITOR

At first glance it looks like one of the flat-screen desktop computers from "Star Trek: The Next Generation." It's much thinner than a regular computer monitor—sort of a notebook computer without the computer. This sleek little screen is actually a stand-alone LCD monitor that comes with its own VGA card; it replaces a standard VGA monitor. You can also buy a model with a built-in compact keyboard: the MKL PC Terminal (\$1,175).

Why use a DATALUX instead of a standard cathode-ray monitor? Three reasons come to mind. First, this screen takes much less space than a standard monitor, making it a good pick for

close areas. The model with the keyboard is especially space-conservative, and you can even hang the screen-only model on the wall. Second, some people are concerned that the low levels of radiation that emanate from standard monitors could be harmful. LCD screens—in both DATALUX monitors and laptop computers—give off virtually no radiation. Third, some people are sensitive to the slight pulsing of standard computer monitors and become overly tired when they look at these monitors for more than an hour or two at a time (especially monitors with short-persistence phosphors). LCD screens switch their pixels on and off much more slowly than conventional monitors, so people with this problem can work with LCD screens all day without becoming tired.

I've used a DATALUX for about four months and found only one real drawback. The current models support just 16 gray shades, even though most laptop and notebook LCD screens now support either 32 or 64 shades of gray. On the other hand, a DATALUX screen is noticeably brighter than the other passive-matrix LCD screens I've seen.

If you're unable to use a conventional computer monitor because of space or health considerations—and you don't require color—the DATALUX ML LCD Monitor may be just what you're looking for.

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## VENGEANCE OF EXCALIBUR

The spirit of Excalibur lives again! You can even bring *Spirit of Excalibur* characters back to life in Virgin Software's *Vengeance of Excalibur*. If you weren't around to defeat the evil sorceress Morgan Le Fay in *Spirit of Excalibur*, there are plenty of new knights to accompany you through medieval Spain and its surroundings in *Vengeance*.

The 256-color *Vengeance* opens with a pan shot of a breathtaking castle, but a large logo with dripping blood foretells the dangers that lie ahead as you pursue the demon lord, fight off mercenaries, and try to lead your knights to victory. You really need a mouse to navigate the program with any speed, since you choose tools from icons at the side of the screen and then apply the tool to a character, object, or list of choices.

The Crystal Ball icon gives the status of characters; the Map icon leads to your map of Iberia. The Hourglass icon offers slow, medium, and fast movement at the map level, while the Magnifying Glass icon zooms to the scene level, where you'll examine and acquire objects, get information from locals, and make key decisions. The Rider icon moves characters at the map level, as long as they are loyal to your cause—enemies, for example, aren't forces you can control. The Scroll icon saves and loads games so you don't have to start from the first scene every time you boot or die, while the Gauntlet icon brings up actions like Pick Up, Search, Seize, Drop, Trade, Give, Talk, Request, Bribe, Use, and Attack.

*Vengeance* explains the situation you and your knights are in, as well as how to navigate the game and handle combat and magic. There are descriptions of each episode, hints, a historical background, and an advisory on the roles of faith and nobility. Knights will refuse to do many evil deeds, like attacking friendly characters. If you make them do too many unethical acts, the knights can die.

The game also allows you to snoop around the map and zoom into scenes without bringing characters to that point in the game, but you won't be able to spoil surprises, since doors are most often locked to voyeurs. You'll be forced to rely on brawn or brain to gain entrance to exotic scenes and reap the rewards hidden there. To gain entrance to the game at all, you'll have to supply a word from somewhere in the handbook—a very mild form of copy protection. But there's no red plastic decoder required as in *Loom*, nor any complicat-

ed code to decipher. You just find a word that's *x* words past a given sub-heading.

I enjoyed the graphics in *Vengeance* and asked a couple of unsurpassed experts from the local BBS what they thought. The two teenage boys agreed. However, neither of them seemed interested in finishing the game and abandoned it in about an hour. We all felt that our characters were killed too often to sustain a sense of involvement, and had I not been reviewing *Vengeance*, I would've abandoned it myself. But if you enjoy games that catch you off guard and challenge your life at many turns, then you've got the right stuff to lead your knights to victory in *Vengeance*.

REBECCA ROHAN

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## PFS: WINDOWWORKS

*PFS: WindowWorks* is an integrated software package for *Windows 3.0* that can do quite a lot. In a package like this, with such a variety of programs, it's important to determine what it can do well and where it falls short.

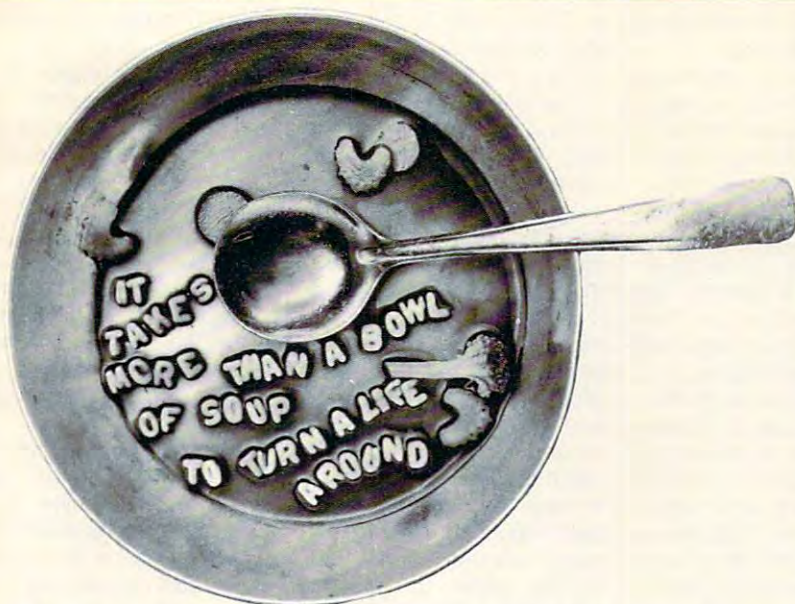
The package includes a word processor, spreadsheet, chart generator, database, telecommunications program, label maker, and address book. When loaded, *WindowWorks* sets up its own desktop, opening a document window and displaying an icon for each program module at the bottom of the screen. To switch to a module, you simply double-click on the appropriate icon. While *WindowWorks'* screens are not as attractive as most *Windows* applications (for example, in the word processor, buttons are little more than white squares with letters in them), they do provide most of the functions *Windows* users expect.

When it comes to features, the fully implemented word processor is loaded, sporting a WYSIWYG display, toolbar, ruler, spelling checker, thesaurus, and outline generator. The word processor can even produce a table of contents or an index. As with most *Windows* word processors, *WindowWorks'* toolbar provides buttons and list boxes for changing fonts, font sizes, text attributes, paragraph justification, and text styles. The ruler allows you to manipu-

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late tabs and indents by dragging and clicking with your mouse.

The word processor can easily handle graphics as well as text. To import a graphic, you first copy it into Windows' Clipboard and paste it anywhere in your document. If you place the graphic amid text, the text automatically flows around the graphic.

Like most integrated packages, *WindowWorks* can share data between its tools. You can, for example, link data from the spreadsheet to a word processor document. However, *WindowWorks* doesn't support Windows' DDE (Dynamic Data Exchange), opting instead for its own type of object and data linking.

Unfortunately, the word processor is infuriatingly sluggish. If you're a fast typist, you'll spend much time waiting for the display to catch up with you. This sluggish-

ness is especially annoying when you're editing.

*WindowWorks*' database provides all the tools needed to create and maintain a database, including a report generator that offers a selection of built-in numerical functions and a query function that can apply logical operators during a search. The database supports five types of fields—character, numeric, date, logical, and memo—that can be formatted in several ways. Buttons at the top of the screen allow you to use a mouse to move forward and backward through a database a record at a time or to jump quickly to the first or last record. Although *WindowWorks* cannot directly import or export other database formats, it can import or export delimited ASCII files.

The database's major weakness is its clumsy design. For example, you must select the Create Text

or Create Field button each time you place a new label or field, forcing you to jump continually between the button and the display when setting up a new form. It would have made more sense to leave the selected mode active until you turn it off. Also, many dialog boxes (and this is true in all the modules) don't allow the selection of options with the standard Alt-plus-letter hot keys. (You can tab to any option and then select it with the Enter key.) Another inconvenience is the inability to type in exact coordinates for labels and fields. Instead, you must depend on your mouse skills to position screen objects correctly.

The terminal program offers a few options missing from *Windows' Terminal*, including a dial directory, Y-batch file-transfer protocol (it omits Kermit, however, which is included with *Windows' Terminal*), and simple

script language. In addition, it provides button icons for the program's major functions. Using the buttons, you can select or change the program configuration, the terminal emulation, the active duplex, the dial directory, the hang-up function, and the send-file and receive-file operations. While the terminal program's "look-back" buffer can hold only 400 lines of text, you can capture an entire session to disk for later perusal.

All in all, online sessions run smoothly—until you want to transfer files. Then the program bogs down, easily taking twice as long to download or upload files when compared with *Windows' Terminal* program (XMODEM transfers). This defect is serious enough to avoid using the terminal program for anything other than leaving quick messages or capturing E-mail.

In addition, I couldn't get



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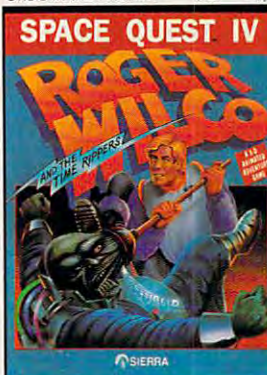
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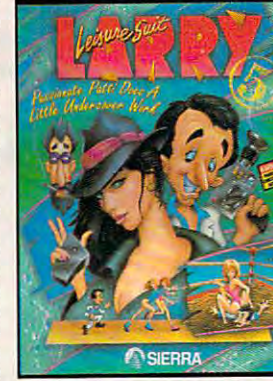
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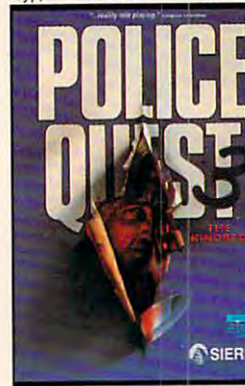
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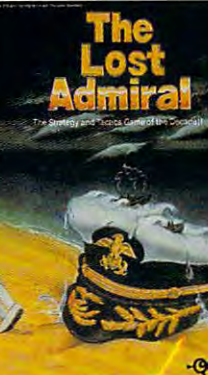
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the terminal's window to operate properly. When I tried to enlarge the window by dragging its bottom edge down, the horizontal scroll bar was improperly redrawn about a third of the way up from the bottom of the window. Apparently the terminal program can't be run with a full-sized window, which limits the lines of text the program can display.

*WindowWorks'* spreadsheet module can import and export *Lotus 1-2-3* and delimited ASCII files. And if you own Spinnaker's *Eight-In-One*, you can also import those files to transfer them to any of the other supported formats. The spreadsheet supports standard cell formats, including text, percentage, scientific notation, and several date forms. Numbers can be formatted in various decimal, dollar, and comma formats.

Although cells can be displayed in WYSIWYG fashion, with bold, underlined, and italic text, these attributes must be selected from a dialog box; they are not readily available on the display. Worse, the attributes stay active only for the currently selected cell or cell range, forcing you to bring up the dialog box continually and reselect attributes.

While you can set the width and height of spreadsheet columns and rows, you must do so by entering values into a dialog box (the opposite of the database's mouse-only field positioning; if only they were the other way around). No easy click-and-drag method here. Both relative and fixed cell addressing are supported, however, and many built-in functions (over 40) are included to aid you in setting up formulas.

*WindowWorks'* chart generator allows you to create

bar, line, pie, area, and high-low-close charts. You can enter chart data manually or import data from a *WindowWorks* spreadsheet file. Once you've started your chart, you can enter chart titles, axis labels, and legends using different fonts and text attributes.

Rounding out the package are the address book and mailing label modules. The former is a stand-alone, dedicated database which, oddly, maintains no connection with the full database module (except through *Windows'* Clipboard). Besides not wanting to create a database from scratch, I can't imagine why anyone would want to bother with the address book at all. Thankfully, the label maker can print mailing labels using both address book or database data.

Despite *WindowWorks'* unfinished, rushed-out-the-door feel, for a while it was the only kid on the block. If you wanted a reasonably priced integrated package for *Windows*, you had to buy *PFS: WindowWorks*. Now that Microsoft has released its impressive *Works for Windows*, Spinnaker's going to have a tough time keeping pace, especially when you consider that both packages flaunt the identical, low price tag. Frankly, I can think of no reason to prefer *PFS: WindowWorks* over *Works for Windows*.

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Casually, you reposition the falling letter blocks before they land on the water. The goal is to form words with three or more letters. The more words you spell, the more points you accumulate. Soon you notice that some words earn higher scores than others because they contain obscure letters like Z, Q, J, and X rather than common characters like S, T, A, and E. You secretly wish for more of the high-value letters to drop.

"This is easy," you smugly tell yourself. Completed words disappear from the well, leaving you more room to maneuver. Then it happens—you progress to another level. Letter blocks begin to drop more rapidly. Again you rally to the challenge, adjusting your reflexes to accommodate the faster speed at which letter blocks now fall. Your score rises steadily. You're on top of the world!

Suddenly, the computer beeps again—the telltale sign that you've made it to another level. More letters fall. Where are the vowels? Why do you get four Ls in a row? The activity becomes difficult.

Your nerves begin to fray. You're all thumbs. Blocks start to land on top of other blocks, pushing the lower ones underwater. Soon sunken blocks reach the bottom of the well. Columns of blocks stack above the water line.

At first, it's possible to get sunken and stacked letter blocks to disappear. The

game accepts words spelled horizontally or vertically no matter where they lie. At higher levels of play, however, blocks fall so rapidly it's hard to regain control. Mercifully, the game ends when a letter block reaches the top of the well. Peace of mind returns.

Is *WordTris* a last-ditch Soviet attempt to capture the hearts and minds of an unsuspecting American public? Perhaps, but it's also a terrific computer game that builds vocabulary skills as it improves hand-eye coordination. Play alone, against a friend, or cooperatively with another challenger. Match wits against three players in Tournament mode. All four of you play identical games to see who earns the highest score. There's even a Head to Head option allowing challengers to play on separate computers connected via cable, modem, or Novell network. Every game type offers four difficulty modes—Children's, Novice, Advanced, and Expert. Each has ten levels of play.

No matter which game or difficulty mode you choose, *WordTris* has "potato chip" appeal. It's impossible to play just one round. Magic Words, Special Bonus, Eraser, and Mystery Blocks, combined with your unrelenting desire to earn a place of honor on the high-scorer list, will keep you coming back.

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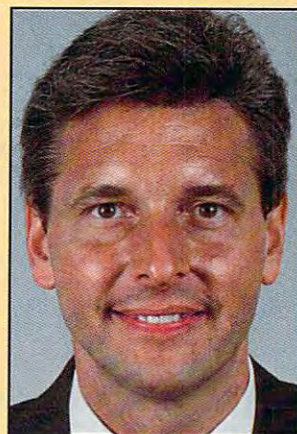


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Right now you could dramatically improve your appearance and look years younger without the use of dangerous drugs, painful surgery, or unsightly hairpieces. Whether you want complete or partial coverage—or you just wish to add volume, thickness, or length to your existing hair—*Hair Dynasty has the solution for you.* Only Hair Dynasty offers you the very latest, state-of-the-art hair-addition methods that are designed specifically with your lifestyle and personal needs in mind.

## GET RID OF YOUR HAIR PROBLEM FOR GOOD

If you are beginning to lose hair or already have a bald spot—*Hair Dynasty has the solution!* You will always feel comfortable whether you're swimming, jogging, skiing, or even closing that *big deal*. And when you're sharing your most intimate moments with your loved one or you're surrounded by thousands of people, only you will know you owe your self-confidence and great appearance to Hair Dynasty. But don't take my word for it. . . .

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- **You select the hair length, hairstyle, and hair color!**
- **See how you will look before you buy!**
- **Select from hundreds of hairstyles!**
- **See yourself with new hair again!**
- **There is no cost or obligation!**

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This is a major breakthrough!

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## MY LOSS IS YOUR GAIN!

Hair Dynasty was created by an individual *like yourself* who used to have a hair-loss problem. Look at these unretouched photographs carefully, *then ask yourself*, Does that hair have the kind of shine, the kind of thickness, the kind of life and vitality you'd like your own hair to have today—no matter what your age? *It can*—since Hair Dynasty offers you a solution we can both be proud of!

## IT COULD CHANGE YOUR LIFE!

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## FREE INFORMATION!

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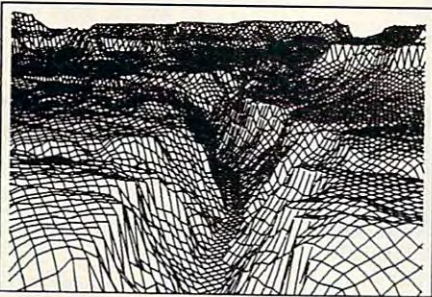
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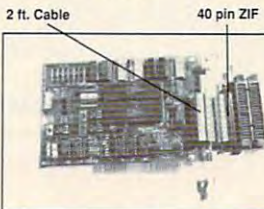
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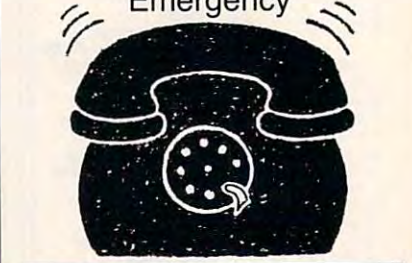
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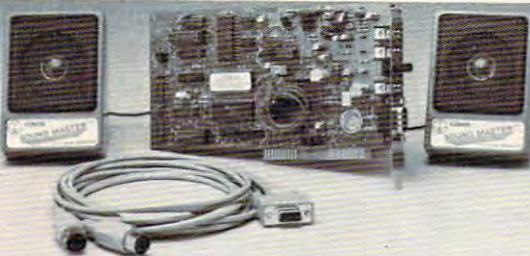
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# LATE-BREAKING NEWS

Jill Champion

## Insider Radio

"Software/Hardtalk" is a new half-hour public radio program in the works (and hopefully on your public radio airwaves by the time you read this). Western Public Radio is launching the program, which will be hosted by noted computer journalist John C. Dvorak and will feature news, commentary, new product announcements, guest interviews, and question-and-answer sessions with listeners—all on the subject of personal computing. As public-radio

programs *Mickey's ABCs*, *Mickey's 123s*, and *Mickey's Colors and Shapes*. If you currently own the copy-protected version of this software, you can obtain free upgrade replacement disks (with a \$4.50 shipping and handling charge) by calling (800) 688-1520. Any Disney product can be ordered by contacting the same toll-free number.

## Brains on Board

For PC jobs that require overnight operation, time-consuming backups, and other lengthy or unattended operations, Server Technology now offers an Intelligent Power Module that will automatically turn your PC off when a job is completed. The computer-activated module, which resides inline between a regular wall outlet and your PC power strip, accepts signals from the PC to control the AC power supply—either on or off. The module can also be used to control other office equipment via a PC equipped with multiple serial ports. The module, software, and signal cable list for \$59. If you would like further information, contact Server Technology, 2332-B Walsh Avenue, Santa Clara, California 95051; (408) 988-0142.

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## Disney Lifts Protection

To make its children's programs a bit more customer-friendly, Walt Disney Computer Software has removed the copy protection from its ever-popular preschool software

itor-in-chief of *Boxing Illustrated* and hosts the TV show "Boxing Illustrated."

## Se Habla DeskMate Aquí

Tandy has released a Spanish version of its popular *DeskMate* personal productivity software. *Spanish DeskMate* includes the same collection of applications as *DeskMate* version 3.5 (the most current) and is available for \$99 through Radio Shack stores.

## Photo Finish

Specialized electronic services are popping up everywhere, now that the world is going online. From restaurant guides to special online shopping services, if there is a niche, some service seems to be out there filling it. One of the more interesting applications is Donatelli Model Management of Reading, Pennsylvania, which is distributing photographs of its models to desktop publishers through CompuServe. Members can order 35mm slide duplicates or color prints of male and female models photographed in a variety of commercially useful situations. It's your basic online stock-photo book.

## There Is Help for You

Would you pay \$120 a year for a toll-free hotline for help with over 1000 popular software programs? IDEA Service is betting you will. Its PC Answer Line Service allows unlimited calls per subscriber with no time limits per call. If a question can't be answered immediately, a technical adviser will research the problem and call back with the answer within one hour. Supported software includes *Aldus PageMaker*, *Ventura Publisher*, *Lotus* spreadsheets, *Microsoft Word*, *WordPerfect*, and programming languages. If you would like further information, call (602) 894-7000. □

## Bet Your Bottom Dollar

Boxing fans will be happy to know that MicroLeague Sports has signed on boxing authority Bert Sugar to assist in the development of new boxing and horse-racing simulations to be released this quarter. Sugar has authored and edited more than 50 sports books, which include *Inside Boxing*, *The Thrill of Victory*, *The Sports Collector's Bible*, and *The Great Fights*. He is ed-

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 Macintosh  Apple II  Commodore 64/128 <sup>1</sup> <sup>2</sup> <sup>3</sup>  
<sup>4</sup> <sup>5</sup> <sup>6</sup>
- B. Do you use your computer mostly for  playing games <sup>7</sup>  
 working in your home office  working in office outside home  school work <sup>8</sup> <sup>9</sup> <sup>10</sup>
- C. How many hours a week do you use your computer?  5  15  25  35+  
<sup>11</sup> <sup>12</sup> <sup>13</sup> <sup>14</sup>
- D. Which word processor do you use?  WordPerfect  Microsoft Word <sup>15</sup> <sup>16</sup>  
 PC Write  Wordstar  DisplayWrite  Other <sup>17</sup> <sup>18</sup> <sup>19</sup> <sup>20</sup>
- E. Which spreadsheet do you use?  Lotus 1-2-3  Excel  Quattro Pro <sup>21</sup> <sup>22</sup> <sup>23</sup>
- F. Which online services do you use?  CompuServe  GEnie  America Online <sup>24</sup> <sup>25</sup> <sup>26</sup>  
 Prodigy  Q-Link <sup>27</sup> <sup>28</sup>
- G. What other computer magazines do you read?  PC/Computing  Computer Gaming World <sup>29</sup> <sup>30</sup>  
 Home Office Computing  Computer Shopper  PC Sources  PC Magazine  PC World <sup>31</sup> <sup>32</sup> <sup>33</sup> <sup>34</sup> <sup>35</sup>
- H. Do you influence the purchase of PCs where you work?  Yes <sup>36</sup>
- I. What is your total household income?  >\$30,000  >\$40,000  >\$50,000  >\$75,000  
<sup>37</sup> <sup>38</sup> <sup>39</sup> <sup>40</sup>
- J. How many times per year do you purchase by mail order?  3-5  6-10  >10  
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- K. What is your age? \_\_\_\_\_ years

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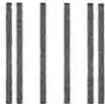
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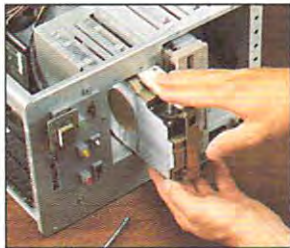
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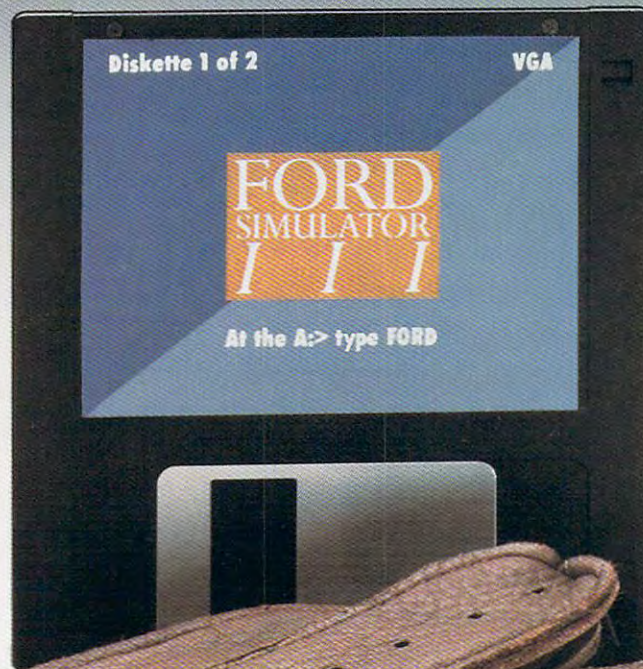
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