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November/December 1985
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## microcomputers

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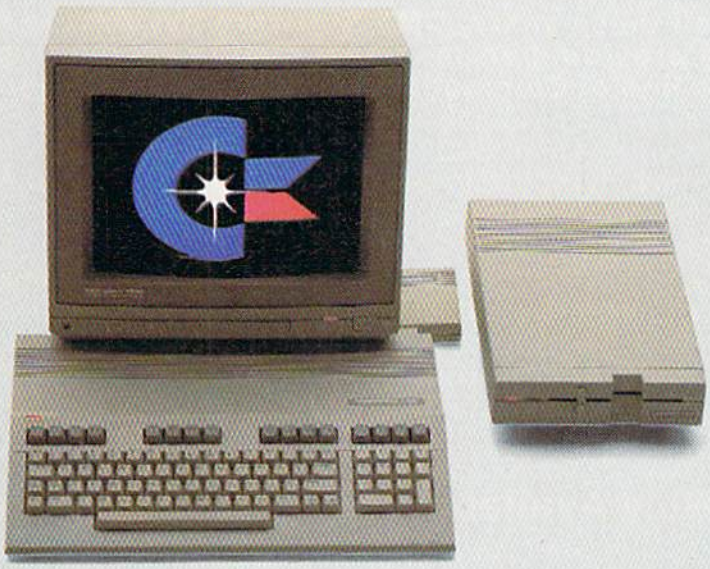

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## THE BEST OF 1985


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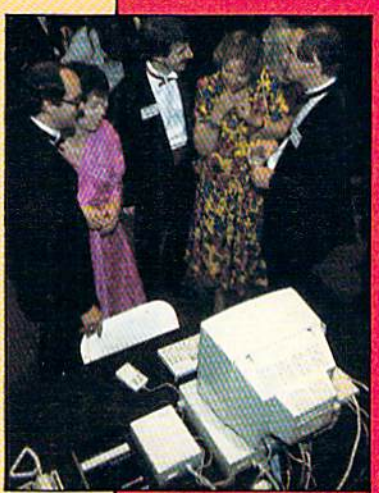
The products that were our reviewers' favorites in 1985, from very serious spreadsheets to very silly games. A handy guide to what's worth buying. compiled by the Editors

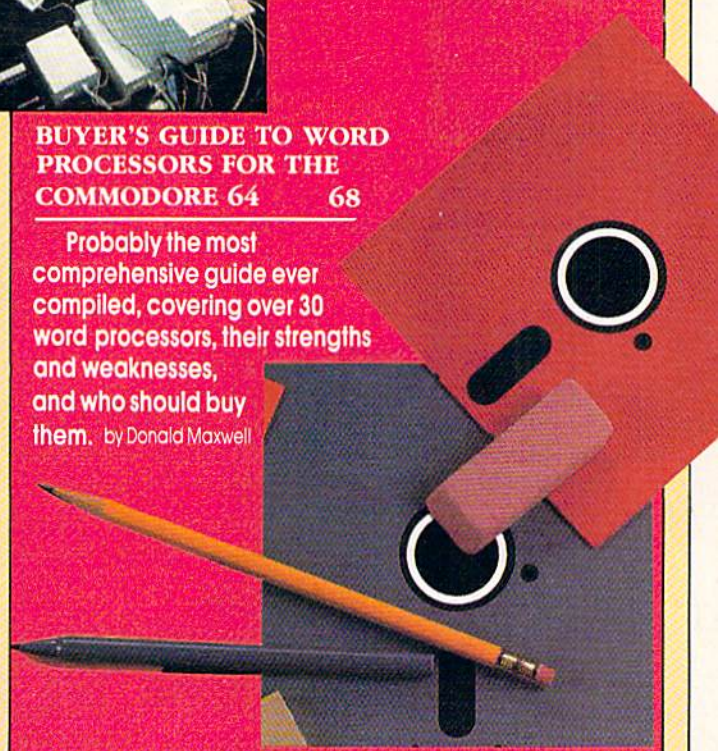
COMMODORE LAUNCHES THE AMIGA 74

A freelance writer who uses many different kinds of personal computers covered the New York launch in July—and came away a believer. by Louis R. Wallace


BUYER'S GUIDE TO WORD PROCESSORS FOR THE COMMODORE 64 68

Probably the most comprehensive guide ever compiled, covering over 30 word processors, their strengths and weaknesses, and who should buy them. by Donald Maxwell

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# One and One Equals One . . . Given Time

Which of our two magazines do you read? Obviously you're reading **Commodore Microcomputers** right now. But about 70 percent of you also read our sister publication, **Commodore Power/Play.** That didn't used to be true. Back in the old days—maybe 2½ years ago—there were two separate and distinct types of Commodore users: the "serious" users (harumph to anything lighter than coding your own spreadsheet in machine language) and the "fun-and-games" users (if it doesn't wiggle, zoom or explode, don't bother me). Thus we created two magazines: one for people who used computers as tools and the other for those who used them as toys.

You don't need to be told that the line between those two types of users has blurred—even disappeared—over these two years or so. You are much more versatile that the typical computer user of the early 80's. And much more computer-literate, even if you've only recently bought a computer. You probably use your Commodore computer for word processing, learning math (or English or speed reading or whatever . . . ), self-enrichment, telecommunications, writing your own programs—*and* playing games. Our two distinct audiences have become, for the most part, one.

Which is why you probably read both our magazines.

And, if we've been doing our job right, you should have noticed that the magazines have begun to look more and more alike. We've made their formats consistent, so those of you who read both can feel as if you're getting one monthly magazine, instead of two bi-monthlies. Throughout 1986, you'll see more and more crossover between the two, not only in how they look, but in what they cover. We'll review selected games, for instance, in **Commodore Microcomputers.** (We've already begun that trend in this issue. See our review of Bantam's **The Fourth Protocol.)** And you'll start to see certain types of "serious" applications showing up in **Commodore Power/Play.** In other words, you'll be getting more of what you want—*every* month.

You'll also be getting increased coverage of the new Commodore 128 and Amiga computers in both magazines, rather than in just one or the other. Commodore 128's have been selling out as quickly as Commodore can ship them, and the Amiga is rapidly gaining a reputation as the outstanding new computer of the year—if not of the decade. You can continue to count on our magazines to bring you software reviews, programming tips, type-in programs and new product information for these new computers. But you also get an added advantage. Because, among all the Commodore-specific magazines, we have the closest relationship with Commodore itself, you'll continue to get all the late-breaking news about these Commodore products before anyone else does. In *both* magazines.

Our loyal Commodore 64 owners take note. You will also continue to get what you want. You will, as always, find programs and product information to help you get the most out of your 64. After all, you still make up the bulk of our readership, and we are dedicated to keeping you happy.

Since this is our last issue of **Commodore Microcomputers** for 1985, we would like to thank you all for your letters and calls over this past year. Whether you've gotten in touch about a program problem or simply to pat us on the back for the improvements we've made, we appreciate hearing from you. It helps us do our job better. Please continue to stay in touch.

*—Diane LeBold*
*Editor*

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"Worth the money, if only for the spreadsheet." InfoWorld, Dec. 17, 1984.

"As a marriage of convenience and value, the program succeeds handsomely...Tri Micro's spreadsheet possesses impressive features." Commodore Microcomputer, May-June 1985.

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"Colorful graphics, sprightly music, and a variety of obstacles help keep the game lively." COMPUTE!'s Gazette, December 1984.

"Rug Rider is definitely a challenge. It gives the hard core game player as much action and thrills as he or she could possibly want." POWER PLAY, April 1985.

Rug Rider, Entertainer 1, Corom Snowdrifts & Sunny Skies, Ghost Town

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# LETTERS

To the Editor:

I've been reading your magazine since the March/April 1985 issue. I find it to be well written and inclusive.

I'd like to add a little more information on Datamost's *Kwik-Load!* utility, which Walter Salm reviewed in the March/April issue. Mr. Salm was correct; *Kwik-Load!* does substantially increase the loading and saving speed of unprotected software. However, one thing he didn't mention was that for *Kwik-Load!* to work properly, the disk drive from which you're loading must, at least during the load process, be the only active peripheral on the serial bus. Otherwise, you'll get a "FILE NOT FOUND" error message.

*John Everly*


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To the Editor:

Regarding your hardware review of the Cardco MT/1 Monitor Tuner in the May/June 1985 *Commodore Microcomputers*, Cardco has informed me that they have discontinued their line of monitor tuners. If there is any person that wishes to sell theirs, or a business that still carries these, I would appreciate being informed of their address.

*Richard Perritt*
*130 Bloor Avenue*
*P.O. Box 603*
*South Porcupine, Ontario*
*P0N 1H0 Canada*

To the Editor:

The "Disdump" article by M.W. Caprio in the May/June 1985 issue of *Commodore Microcomputers* is well written and provides a very useful program for displaying and printing machine language routines. The author advised us that it was written for the Star Gemini printer, and since I have a VIC 1525 and an Epson MX-80, I rewrote some lines to work with both of those two printers. I also improved the data display and printout formats. Following is a listing of the new lines with short descriptions.

Replace lines 100-160 with the following lines to give credit to the original publication.

```
100 REM * * * * * * * * * * * *
110 REM *        DISDUMP       *
120 REM * - - - - - - - - - - - *
121 REM *     COMMODORE        *
122 REM * MICROCOMPUTERS       *
123 REM *     MAY/JUNE '85     *
124 REM *                      *
160 REM * * * * * * * * * * * *
```

Replace line 220 and add line 245 to provide a modified title and author reference.

```
220 PRINT TAB(12) "[RVS,SPACE
    4]DISDUMP
    [SPACE4,RVOFF]"
245 PRINT TAB(12)"[RVS,SPACE]
    REVISED BY EHG
    [SPACE,RVOFF]"
```

Add new lines to provide for printer selection menu.

```
365 IF HD$ < > "Y" THEN 370
366 PRINT"WHAT PRINTER?"
367 PRINT"[SPACE5]C = COM
    MODORE . . . DEVICE#5"
368 PRINT"[SPACE5]E =
```

*Continued on Pg. 8*

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# LETTERS

EPSON MX80"
369 INPUTP$

Change these lines to avoid hyphenating the word HIGHER.

```
390 PRINT" [DOWN]THE
    ENDING ADDRESS MUST BE
    HIGHER"
400 PRINT" THAN THE
    STARTING ADDRESS.": FOR
    I=1 TO 2000:NEXT I:GOTO
    310
```

These new lines provide the necessary tabulations for the two printers.

```
450 IF P$="C" THEN OPEN4,5:
    CMD4:GOTO 465
451 IF P$="E" THEN OPEN4,4:
    CMD4:GOTO460
452 GOTO 366
460 PRINT CHR$(27)"D"
    CHR$(5) CHR$(13)
    CHR$(18) CHR$(21)
    CHR$(26) CHR$(0):
    GOTO470
465 Y$=CHR$(16):X0$=
    CHR$(0):X1$=CHR(1):X2$=
    CHR$(2):X3$=CHR$(3):
    X4$=CHR$(4)
466 X5$=CHR$(5):X6$=CHR(6):
    X7$=CHR$(7):X8$=
    CHR$(8):X9$=CHR$(9)
```

These lines improve the printout and provide the address.

```
915 IF P$="C" THEN 952
920 PRINTC;CHR$(9);S-N;
    CHR$(9);SS$;CHR$(9);OP$;
930 IF AD$(2)=""THEN PRINT
    CHR$(9);AD$(1);AD$(2);:
    GOTO 950
940 PRINT CHR$(9);AD$(2);
    AD$(1);
950 PRINT CHR$(9);CD$;:GOTO
    960
952 PRINT C; Y$X0$X4$S-N;
    Y$X1$X1$SS$Y$X1$
    X6$OP$;
954 IF AD$(2)=""THEN PRINT
    Y$X1$X9$AD$(1)AD$(2);:
    GOTO 958
956 PRINT Y$X1$X9$AD$(2)
    AD$(1);
958 PRINT Y$X2$X4$CD$;
```

These lines add the address to the display.

```
1050 PRINT C;TAB(4)S-N;
     TAB(11)SS$; TAB(16)OP$;
1060 IF AD$(2)=""THEN PRINT
     TAB(19)AD$(1);:GOTO 1080
1070 PRINT TAB(19)AD$(2);
     AD$(1);
1080 PRINT TAB(24)CD$;
```

On lines 1210, 1220, 1260, 1280, etc., for those mnemonics having only a space between the three-letter mnemonics and the $, add another space to force the $ one space to the right, thus causing it to align with the $ of other mnemonics that have a parenthesis or # preceding the $. This will make the data much easier to read.

To use two printers selected by software, one must be switched to address five. That is easy to do with the slide switch on the back of the Commodore 1525.

To print only to a Commodore printer, delete lines 366-369, 451, and 460. Then replace line 450 with

```
450 OPEN4,4:CMD4
```

To print only to an Epson MX80 printer, delete lines 366-369, 450, 465, and 466. Then replace line 451 with

```
451 OPEN4,4:CMD4
```

*E.H. Giles*
*Sunnyvale, California*

To the Editor:

I've just returned from a one-year teaching exchange to the beautiful country of Australia. In the state of Victoria, Commodore computers are gaining a foothold, though in general they are running about a year behind us in availability and prices. For example, when I arrived at my high school (Nathalia High), I began a search for a

*Continued on Pg. 10*

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# LETTERS

computer system. At that time (March 1984), the big seller was the VIC 20, and it was selling locally for around $300.00 U.S.

At that time, the Commodore 64 was advertised, but not readily available, for about $600.00 U.S. As the computer coordinator for Nathalia, I was pleased that by mid-year we had ten 64 computer systems installed and operating for less money than our neighboring school district paid for a smaller Apple system.

Though they have to import a lot of their technology, the Victorian Education Department is very good about mobilizing and supporting computer education. They appointed a committee which studied their needs, studied the various computers available, and recommended the three best computers for class usage. The 64 made that list. By the time my year was up, every region had a computer center equipped with 64's, and dedicated to in-servicing teachers. The government then paid for substitute teachers so that interested teachers (two from every school) could take an entire week off for free training. Needless to say, I had a very rewarding year.

*Tim Boyd*
*Sugarcreek, Ohio*

To the Editor:

I thought that your Commodore users might like to know how the 64 is making out north of the border. A Commodore word processing system using our *PaperClip* program, a Commodore 64, and the Commodore 1702 monitor recently did extremely well in a major competition against the giants of the computer industry, including IBM, Apple, Xerox, and Sperry.

The Canadian Science Writers Association sponsored an event called The Great Canadian Word Processing Rally at McMaster University in Hamilton, Ontario, and Commodore proved not only that it can hold its own against the expensive dedicated word processing machines, but also that it is one of the best buys.

We finished in the middle of the total points competition, but when the total points were scaled to the cost of the system, we wound up at the top in the number two position, far ahead of the rest of the pack.

We joked with the judges after the rally that the Commodore word processing system should be given bonus points, because it also plays great games, unlike most of the competition.

*Martin Avery*
*Batteries Included*
*Ontario, Canada*

---

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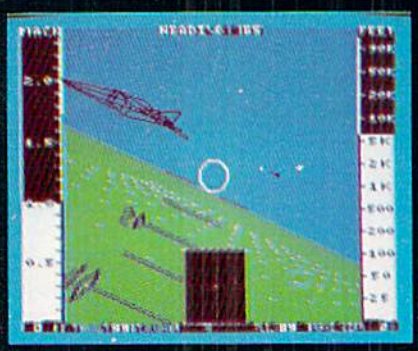
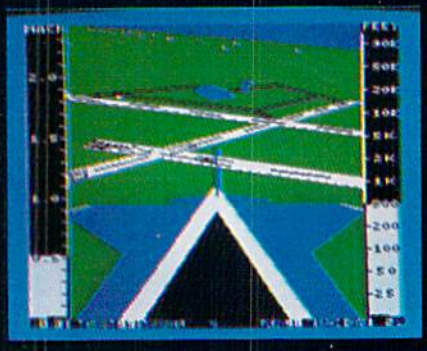


F-16 Dogfight with Enemy MiG-23 Fighters

F-18 on the Deck of a Nimitz-Class Aircraft Carrier (Control Tower View)



F-16 High-G Pullout over Detailed Wargame Scenery (Rear View)

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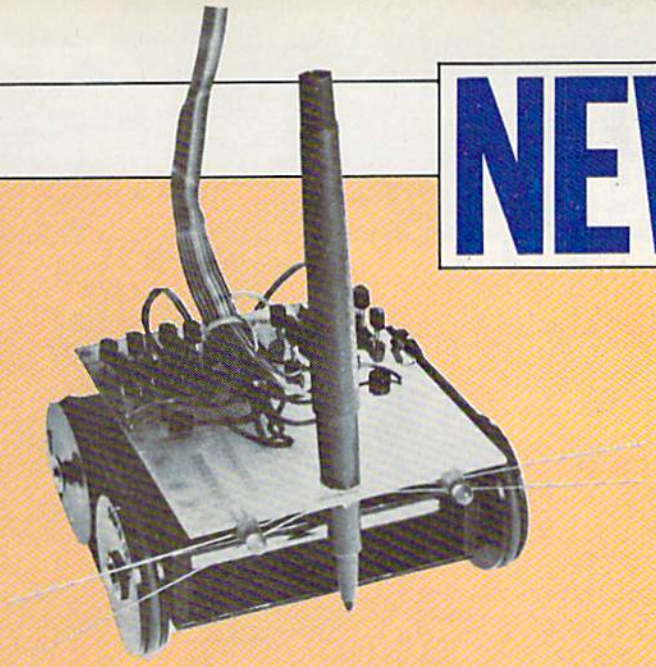
# NEWS



## Robot Kit

The Micro-Kitten by Spectron Instrument provides remote manipulative output for the VIC 20 and Commodore 64, and has a broad range of uses, including automation modeling, transporting, drawing, gaming, and starring in educational and home movies. Expansions include various sensing devices, radio control, and on-board intelligence.

Kits include starter programs, instructions, applications, parts, and computer interface circuit (useful with other Spectron kits). Base list price is $80 and $120 assembled, or $195 with radio control and $330 with radio control assembled. (Spectron Instrument, Robot Division, MS 24, 1342 W. Cedar Avenue, Denver, CO 80223)

## Telecommunications Program

The *Information Connection* for the Commodore 64 combines a telecommunications program, text editor, and tutorial software on one disk. Intended for the beginning computer user, the *Information Connection* teaches users all the fundamentals of telecommunications that allow them to tie into CompuServe, The Source, Dow Jones/News Retrieval, QuantumLink, and other on-line services.

The tutorial features a simulated on-line session which allows the user to practice searching for information without having to actually be on-line. It offers a simple user interface. There are no control keys to press. If you can point, you can operate the program, which features plain-English prompts, full-sentence status messages, and consistent stop/go control.

The program was designed by Ken Skier, who wrote *SkiWriter* and *SkiWriter II*. It has a suggested retail price of $39.95. (Grolier Electronic Publishing, 95 Madison Avenue, New York, NY 10016)

## Sequel to *The Print Shop*

Broderbund has released *The Print Shop Graphics Library, Disk Two* for the Commodore 64, the second follow-up product to its top-selling program *The Print Shop*.

*The Print Shop Graphics Library, Disk Two*—like *The Print Shop Graphics Library, Disk One*—provides additional designs, symbols and pictures for do-it-yourself graphic creations, but this time in six new categories: jobs, hobbies, people, places, travel, and health. The retail price is $24.95. (Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101)

## Commodore 64 Software Wins Emmy

Richard and Ron Grant of Sherman Oaks, California, have won an Emmy award for Technical and Scientific Achievement in Television for their *Time Processor* software. This software for the Commodore 64 helps composers develop musical scores to be synchronized with television or movie scripts. By displaying information on timing tempos and measures, the software allows the composer to make adjustments to an entire score quickly and accurately. It can also audibly create the metronome clicks for the composer to use when conducting the music. The *Time Processor* has been used to create musical scores for television programs such as Dallas, Knots Landing, Knight Rider, Mighty Orbots, Berringers, and the Olympic coverage.

This is the first Emmy ever awarded to a piece of software. We congratulate Richard and Ron on their award and acknowledge their contributions to both the television industry and the library of excellent Commodore 64 software.

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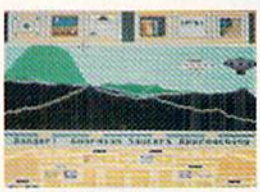

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# NEWS

## Serial-to-IEEE Interface

Progressive Peripherals & Software has released E-Link, a Commodore serial-to-IEEE interface that is compatible with Commodore IEEE peripherals and totally transparent to the Commodore 64. E-Link uses no internal Commodore 64 memory, has an independent power supply, and is controlled by a microprocessor. The interface retails for $99.95. (Progressive Peripherals & Software, 2186 South Holly, Denver, CO 80222)

## On-Line Investment Analysis

A new on-line investment analysis system, Vestor, has been introduced by Investment Technologies. The system offers any user with a computer and modem a new tool for studying and analyzing investment alternatives. Vestor provides financial information and evaluates and generates buy-sell signals for over 4,500 publicly-traded securities—including stocks, options, and futures—traded on the New York and American Stock Exchanges, plus most major over-the-counter (NASDAQ) issues.

Among the data available on-line: earnings per share; price/earnings ratios; projected highs and lows for the current trading week; regard/risk ratios; short- and long-term strength ratings; timing signals for buy or sell; and percentage profit or loss that would have resulted had the last buy or sell signal been acted upon. (Investment Technologies, 510 Thornall Street, Edison, NJ 08837)

## Video Adaptor Cable for the 128

Cardco has released the C-128/80, a video adaptor cable that will enable the Commodore 128 to output 80-column monochrome displays to any standard composite video monitor. The C-128/80 connects to the computer's RGB port and the monitor's video input jack. The C-128/80 sells at a suggested retail price of $9.95. (Cardco, 300 S. Topeka, Wichita, KS 67202)

## Home Control

X-10 has introduced Powerhouse, an interface that enables the Commodore 64 to automatically control virtually all electrical devices in a home, store or office. The interface is a small peripheral that is actually a self-contained microcomputer with its own microprocessor. Memory is backed up by a battery that can sustain it without AC power for more than 100 hours. It retails for approximately $150, including software and computer interface cable. (X-10, 185A LeGrand Avenue, Northvale, NJ 07467)

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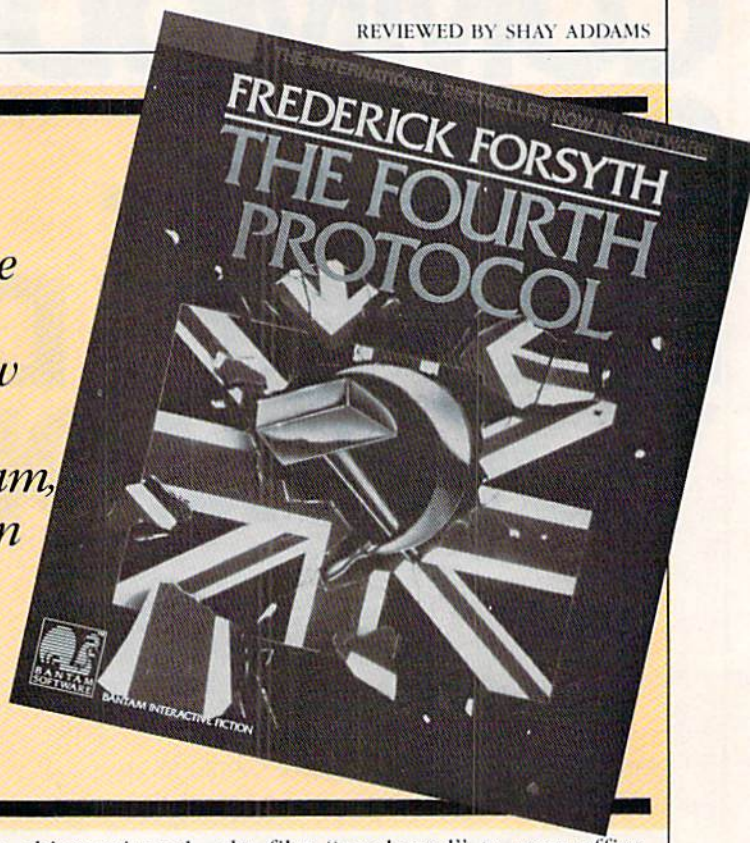
REVIEWED BY SHAY ADDAMS

# The Fourth Protocol

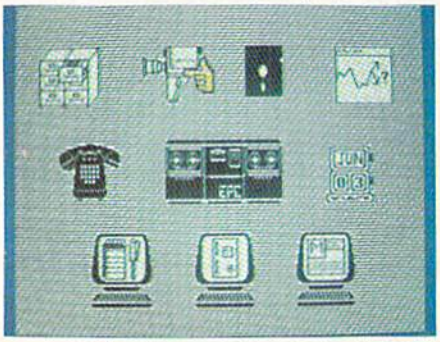
**Computer:** Commodore 64/128
**Publisher:** Bantam Electronic Publishing
666 Fifth Avenue
New York, NY 10103
**Medium:** Disk
**Price:** $34.95

*An exclusive look at an exciting new adventure from Bantam, soon to be in a store near you.*




All the novels so far adapted as adventure games have been science fiction or fantasy stories like *Hitchhiker's Guide* and *Dragonworld*. Soon to be released by Bantam Software, *The Fourth Protocol* marks the next phase of interactive fiction: It is the first spy thriller by a bestselling author to be "adventurized." Frederick Forsyth's story concerns a Russian plot to smuggle an atomic bomb into England, explode it and then blame the catastrophe on an accident at an American military base. They hope the negative backlash from the public will lead to the election of a leftist government in England, one that will quit NATO and make it easier for the Russians to take over Europe.

The plot of Forysth's story is convoluted, perhaps the reason game designers John Lambshead and Gordon Paterson devised a presentation that differs radically from *Zork*-style adventures. This game uses icons—not a parser—for inputting commands, and the game's responses appear in windows instead of being displayed in a

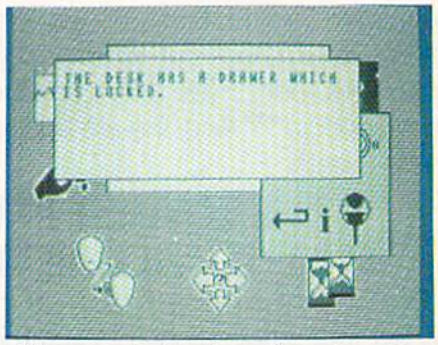


screenful of text. Also, it is divided into three games, all on the same disk, that are played sequentially. In the first, "The NATO Documents," you, as British agent John Preston, must find the traitor who recently gave five top secret documents to the Russians. Rather than solving object-oriented puzzles as in a standard adventure, you have to analyze information about various suspects, formulate a surveillance plan, and act appropriately on your findings.

Eight icons represent the various activities you may conduct from your office at Cencom, the central communications section of MI5 (England's counterpart to our CIA). By pressing a key, you easily move a hand-shaped cursor around the icons, then press RETURN or the firebutton to select one. Occasionally you might need to type a secret password or other brief messages.

When an icon is activated, a new window opens up and offers several more icons. Choose the telephone icon and, in the new window, you'll see three more: one for answering the phone when it rings, another for making calls, and a third for putting callers on hold. The caller's words show up in a window labeled "message pad." By selecting a file cabinet icon, you can store a message and look it up later by typing in the name under which it was filed.

One of the first phone calls alerts you that clues about the NATO papers await in the computer at Blenheim, MI5's archives. Rather than trundle over, you can ring them up and have the files "modemed" to your office. (It's a lot like downloading CompuServe files.) Of course, you won't be able to access the archives without a password. Another phone call fur-

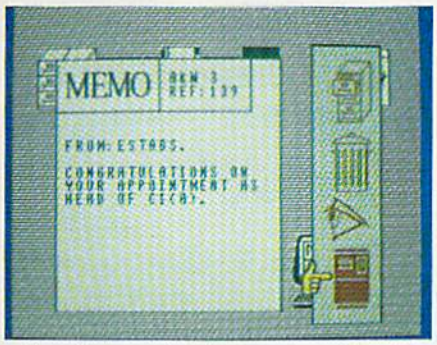



nishes a coded series of numbers that you convert into the password by deciphering them with one of three "decoder pads" in the manual.

The Blenheim files name dozens of British agents who had access to the NATO papers, so you must apply deductive reasoning to determine which are the likeliest suspects. To complicate matters, other agents phone in with the names of more British personnel who have been acting suspiciously. Most turn out to be red herrings, but you'll have to sift through quite a few clues before narrowing down the list of suspects. And you can't just check out the suspects on a trial-and-error basis and hope some-

thing turns up, because the culprit will ditch vital evidence early on. Time is constantly passing (unless you freeze the action), and you have only from June 1 to July 11 before being pulled off the case. You can accelerate the action by advancing a day ahead with the calendar icon.

To spy on people, you choose the icon shaped like a video camera. This brings up icons that let you assign up to 25 "watchers" to follow each "target" whose name you type in. (The game's text is interspersed with similar spy jargon, all defined in the manual's glossary.) When a watcher has something to report, a message pops up in a computer-screen icon. You can read it by selecting that icon, and the report may lead to other suspects to investigate.




Two similar icons provide intermittent reports and memos from other sections of MI5 and from your boss, Brian Harcourt-Smith. He will prompt you for decisions concerning new evidence reported by the watchers. After a British woman is observed meeting with a foreign spy, for example, a window displays a memo asking if you want to arrest her, interrogate her, or choose one of several other actions from the menu. Ultimately, you must adopt the mindset of an intelligence agent and learn to think like a spy in order to determine the traitor's identity.

Scoring is of two types: prestige and progress. Prestige tells how efficiently you're managing your watchers. You begin with 100 and will lose some or get more depending on your prestige score. The progress rating reflects your success in solving the case, as well as how you deal with other security problems that crop up during the game. (It is possible to complete game one without attaining the top progress score of 100%.) When you think you've uncovered the traitor, you can call Sir Anthony, who will ask a series of questions. If they are answered correctly, you'll receive the password needed to play the second game.

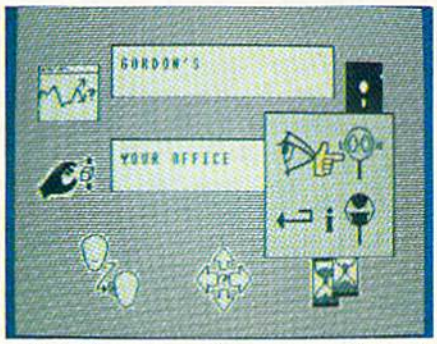
Game two, "The Bomb," feels more like a standard adventure, for you can leave your office and explore London by foot, taxi and subway to find the location of the Russian nuclear bomb. An icon-based interface simplifies choosing directions: You move the cursor to one of four arrows and press RETURN to go north, south, east or west. Other mini-icons symbolize climbing up and down stairs, going in and out of doors, and so on. A hand-shaped icon opens a window full of mini-icons that let you pick up, drop, and use objects.

An eye-shaped icon permits you to look at the current location as well as objects in it or in your inventory. You can talk to people, whose replies are shown in windows. In addition to finding and making proper use of objects, you'll have to draw on your map-making skills while traveling from Parliament to the Tower of London and back to headquarters. Again, you must deal with other threats—the Red November terrorists, for example—while attempting to accomplish your main goal. A "spy efficiency rating" indicates your score in game two.

Only the final game, "SAS Assault," looks and plays like a conventional adventure, employing a parser instead of icons. After typing in the password you learned by completing game two, you will find yourself in the room where the bomb is concealed. A full-screen graphic illustrates the room and its contents. There's no score: your goal is simply to find and disarm the bomb. Roving Russian agents will do their best to stop you. These killers are well-animated characters whom you'll see walking past the window and through the open door. You can type in "attack KGB" and hopefully kill them, then get busy trying to defuse the bomb until more agents rush into the room. Their incessant and random attacks generate considerable tension, and the pressure builds as you strive to remember the information (gleaned in the previous games) necessary to complete the mission.

If the guards kill you, animation and sound effects signal that the bomb has exploded. Then a paragraph of text spells out the results, which are that the Russian plot has succeeded in its long-term political goal. All three episodes are of intermediate difficulty, and you'll appreciate the disk-shaped icon that facilitates fast saving and reloading of a game in progress (though this is unavailable in the third episode).

The visually oriented interface is well-implemented and fun to play with. My chief criticism is that each window, no matter how brief its message, remains onscreen for five seconds. That's not long, but sometimes you must step through several windows to reach the one you need. You cannot simply "press button" to operate an elevator, even when you know you're standing in front of it. First you have to hit the "look" icon to elicit a description of the hall. After five seconds, another window reveals the elevator's existence, then the next one asks if you want to use it. Wading through this series of windows consumes far more time than typing "enter elevator then press button" as you would do in a parser-based game. Also, using an icon for choosing directions and moving—at least a three-step process—isn't as convenient as typing "n" for north.



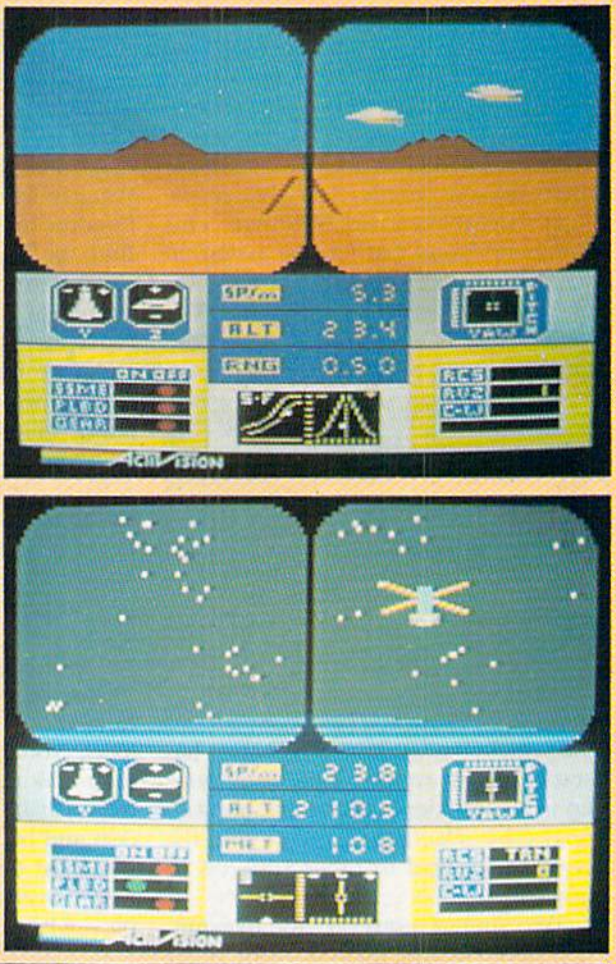

But these are minor snags that affect only the second episode and even then don't substantially bog down the flow of the game, which succeeds by convincingly propelling the player into the mind of the novel's protagonist. Not just another "look behind the rock" adventure, *The Fourth Protocol* poses a stimulating set of mental challenges for adventurists who have grown weary of waving swords at trolls, rescuing princesses from evil wizards, and seeking mystic orbs. C

REVIEWED BY ERVIN BOBO

# Space Shuttle

**Computer:** Commodore 64
**Publisher:** Activision
2350 Bayshore Frontage Road
Mountain View, CA
94030
**Medium:** Disk
**Price:** $34.95

*Your mission is to fly into space, achieve the proper orbit, and rendezvous with six or more satellites. If you can land with 7,500 units of fuel, you'll achieve the rank of Commander.*



From the moment you see *Space Shuttle* on the shelf, you know you're on to something special. The full color photo of the space shuttle illuminated by spotlights is as dramatic as the software itself. Real screenshots on the back of the box show you exactly what you can expect.

Inside the full-color flight manual, lavishly illustrated with screenshots, you go step-by-step through all the procedures from lift-off to landing—some of the best, and certainly the most attractive, documentation I've seen.

When the disk has been booted, you're treated to a view of the control panel and an out-the-window scene of blue sky and drifting clouds—presumably what a shuttle pilot sees as he is lying on his back waiting for lift-off.

At this point, one of three levels may be selected. Level one allows you to do no wrong. While you have control over the flight path and the attitude of the Shuttle, on-board computers override most of your mistakes to prevent aborted missions.

At level two, you have partial control. Some aborts are overridden and no fuel units are used, so you have all the time in the world to complete your satellite docking mission. At level three, you are in complete control. Fuel is consumed and all abort conditions are operative.

Your mission is to fly into space, achieve the proper orbit, and rendezvous with six or more satellites. Should you accomplish this—and don't expect to do it on your first session unless you're a real shuttle pilot—and if you can land with 7,500 units of fuel—you'll achieve the rank of Commander.

Commanders receive a special hero's welcome upon landing at Edwards AFB, and a screenshot of this forwarded to Activision will award you a Shuttle Commander emblem: your wings.

The countdown begins. A keyboard overlay helps you remember all the mandatory tasks. Switch on the main engines and at T minus 4, press the joystick firebutton to lift off. There is a slight delay while the engines build power and the explosive bolts release your rocket from the launch pad, but then you're on your way.

Drifting clouds whip past your windshield as you enter the buffeting zone, the point where atmospheric density reacts against your forward movement to rattle your teeth. Your windscreen flashes red as the solid-rocket boosters are blown away, the buffeting ends, and you see the stars.

No, you're not there yet. Instead of dwelling on the stars, you must keep your eyes on the control panel, using your joystick to maintain a proper flight path and using the fire button to maintain proper thrust from your engines.

Once in orbit, rotational and transitional engines allow you to correct pitch, yaw and roll, as well as altitude. Crosshair displays on the control panel help in correct centering. You may also display your X, Y and Z axis with the X, Y and Z keys.

After docking with a satellite—and I've chased some around the world without achieving rendezvous—you may choose to go home. You must rotate the shuttle to a point where you are "flying" backwards. Close your cargo bay doors and use your main engines to slow, begin your descent, then rotate once again to head toward Earth at the proper altitude.

Radar guides you along the flight path displayed on your console, but at about 160 miles, the heat of re-entry surrounds you with flashing fire and

*Continued on Pg. 134*

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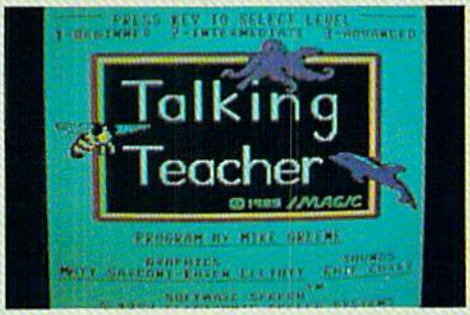
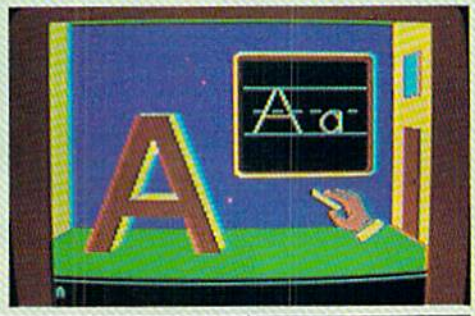
REVIEWED BY TOM BENFORD

# Talking Teacher

**Computer:** Commodore 64
**Publisher:** [illegible]
[illegible] Bayshore Frontage [illegible]
[illegible] View, CA [illegible]
**Medium:** [illegible] drives not supported
**Price:** [illegible]

*The program sets a new standard for early learning educational software, with clear and natural sounding speech that teaches over 150 words and letters.*




If you have a youngster in your household between the ages of two and eight, here's the program for you. *Talking Teacher* contains three learning games for [illegible] children. By using these lessons, the child can learn capital and lower-case letter identification and [illegible]; a basic vocabulary and [illegible] letter sounds of more than [illegible] and spatial relationships. [illegible] input is handled through [illegible] teaching the layout [illegible] process.

Lesson [illegible] intended for users in the two through five age group. The program [illegible] each letter as it is typed. [illegible] way to teach tykes the [illegible] and provides an excellent [illegible] for reading skills.

Lesson [illegible] intended for three through [illegible] takes the youngster [illegible] through the alphabet [illegible] pronounced and used in [illegible] each letter is correctly [illegible] to the audio and [illegible] animal, creature [illegible] with that letter is [illegible] pressing the right [illegible] them in a pastoral [illegible]. This stationary scene [illegible] into scrolling screens [illegible] of the alphabet progresses [illegible] time the child reaches Z, [illegible] impressive menagerie [illegible].

In lesson [illegible] child is asked to identify [illegible] letter of the words [illegible] lesson two. This section [illegible] for children in the four through [illegible] age range. Any mistakes [illegible] remembered and reviewed [illegible] in the lesson. Correct [illegible] a musical reward that grows longer with each correct response.

The talking portion of *Talking Teacher* really makes the program, and makes it extremely easy for nonliterate preschoolers to use. Additionally, the program is totally crash-proof; any keys that would normally halt or crash program execution have been disabled. This is a very good feature, since parents won't continually have to reload the program because it has crashed.

Electronic Speech Systems (ESS) of Berkeley, California, is responsible for the speech used in the program. If you've played *Impossible Mission*, *Ghostbusters*, *Cave of the Word Wizard*, *Slap Shot*, *Kennedy Approach*, or *Beach Head II*, then you're already familiar with the high-quality speech used in these products. *Talking Teacher* is the most ambitious product released to date using Electronic Speech Systems' technology. Quite simply, it sets a new standard for early learning educational software. That such clear and natural sounding speech is possible entirely through programming, without the use of external hardware for playback, is absolutely amazing. Just saying I was impressed is an understatement; perhaps speechless comes closer.

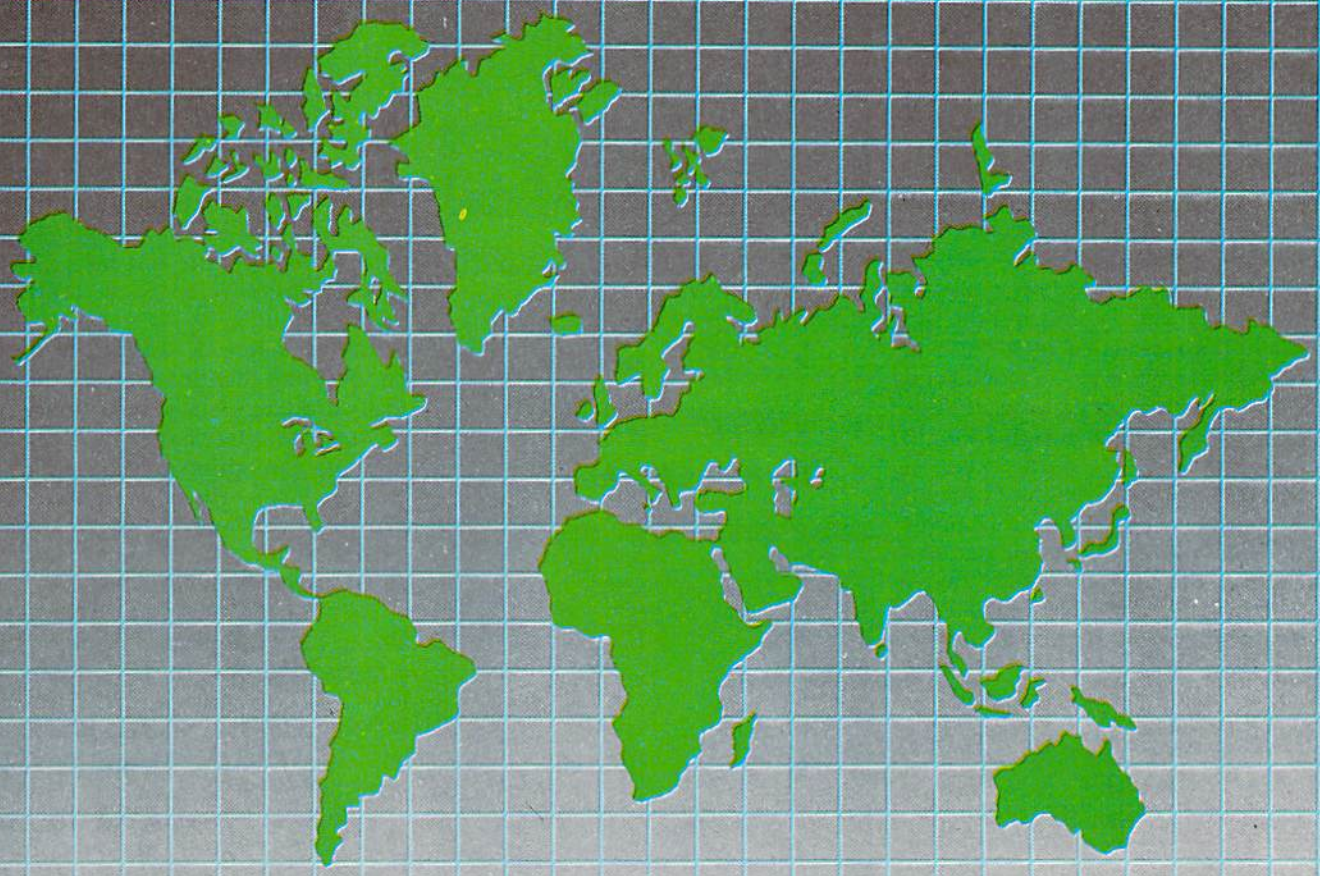
In addition to the superb quality of the speech, *Talking Teacher*'s vocabulary is extensive, with well over 150 words and letters. To store the massive bytes that comprise the vocabulary, speech routines, graphics and program code, Imagic went the "flippy" route, using both sides of the same disk. Upon loading the main program, you are instructed to take the disk out, turn it over and reinsert it, followed by a RETURN to continue the load. I like this approach, since everything is contained on one disk.

The graphics and animation are as good as the synthetic speech, as are the excellent music and sound effects. The program's lavish use of color and easily identified forms ensures that it will hold the youngster's attention and provide many hours of quality learning time at the computer.

Helpful hints are included in lessons two and three, and delivered through vocalizations. For example, if the "target" letter is an "A," the program addresses the user this way: "Can you find the letter A on the keyboard? Press it when you do." All the while a capital "A" and a small "a" are displayed on-screen to help identify it. If the child doesn't respond within a few seconds, the voice says "If you need help finding the letter A, press any key." By pressing any key, the child will receive directions as to where the "A" may be found on the

*Continued on Pg. 135*

# SCENERY DISKS *for* FLIGHT SIMULATOR II



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REVIEWED BY CHRISTINE ADAMEC

# Rainbow Painter

**Computer:** Commodore 64
**Publisher:** Springboard
7807 Creekridge Circle
Minneapolis, MN 55435
**Medium:** Disk
**Price:** $34.95

Is your child a scribbly scrawler who loves to color the sun purple and the grass orange? Or perhaps she meticulously stays within those lines, always coloring the flowers pink and the sun yellow? Both kinds of children will love *Rainbow Painter*, a colorful and exciting drawing program. *Rainbow Painter* allows your imagination to run wild.

I started with the "picture" menu, which offers a choice of 12 options, including nine categories of pictures as well as the "playground," "disk," or "mirror" options. If you'd like to color or decorate pictures which already exist, your electronic coloring book awaits. Use your keyboard or joystick to select one of the categories, from dinosaurs and birds to flowers and fairy tales.

Each category has different "pages" within it, for even more variety. For example, the animal option gives you a cute puppy or a howling coyote, while the space option offers a view of Saturn or a spaceship's view of earth. There is a total of 44 different pages to color.

The black-and-white line drawings are very well done. Most are cute or humorous, while several are downright beautiful. The rose, cardinal or space scenes, for instance, make your fingers itch.

Once you've decided on your category and loaded your picture, look to the side of your screen. You'll see your color palette displayed, with the current color shown at the bottom left. You can change colors by moving your cursor to the palette until you're next to the one you'd like—then press the joystick button. If you don't like the palette you see, choose another one from stripes and checkerboards to a pattern of a boy and his dog. You can even create your own pattern if you desire.

*This program is one a novice can start out with, yet it's also one that "grows" with the child.*

You can also move to the icons depicted at the bottom of the screen. For example, the crayon icon enables you to use dozens of shapes and lines available—choose the one right for you. Or you can select the "fill" option. Return to your picture, move your cursor inside an enclosed space, and press the joystick button to fill it up with color.

Don't like the last move you've made? Use the eraser icon and it eliminates your last action. Or you can "magic slate" the whole thing by choosing the trash can icon.

We tried the fairy tale category, and decided not to go with the Jack and the Beanstalk picture, instead moving on to Rapunzel. My conservative seven year-old daughter colored Rapunzel's hair yellow, her dress blue, and completed a lovely picture which she saved on another formatted disk.

But if you'd rather design your own drawing, that's okay. You'll head directly for the "playground." (And if you've saved some pictures you'd like to admire all over again, go to the "disk" option.)

My six year-old preferred the "playground" option. He opted for a thick line, and proceeded to draw a strange purple pattern. Then he selected the "hat of tricks" icon and chose the "box" option. Returning to his picture, he reproduced a huge purple box on the screen, and later placed several green circles at strategic points.

After a while, he decided to move on, deciding that this picture was not really a masterpiece worth saving. So he "trashed" the picture by choosing the trash can option, and then started all over again. He decided that he'd like to "color" again, so he readily moved to the picture menu and ordered up the dinosaur pictures.

The "mirror," another choice available in the main picture menu, is also a fascinating option. This choice allows you to mirror what you've drawn, sideways, up and down, or both to create exciting kaleidoscope patterns.

Springboard recommends the program for ages four on up to the teens. I suspect your four year-olds will need supervision with this program—at least until they master the use of the joystick or keyboard and understand what the simple icons mean. They'll also want you to drop everything and run and see their beautiful creations—so don't expect an uninterrupted hour when you set your small child up with this program. Your older children should be able to entertain themselves easily with this program. In fact, I see it is best-suited for children aged seven or eight and above.

*Rainbow Painter* is an absolutely charming program, and one I strongly recommend to parents, whether you think your children have artistic leanings or not. (Maybe there's a latent artist in your family.) The icons are recognizable and easily mastered. This program is one a novice can start out with, yet it's also one that "grows" with the child—for many hours of intriguing and creative fun. C

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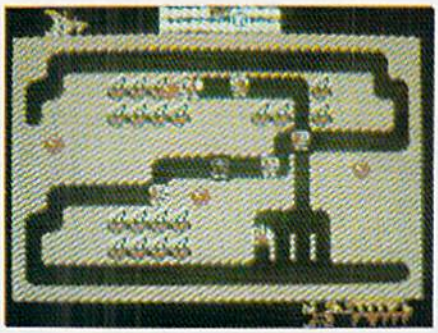
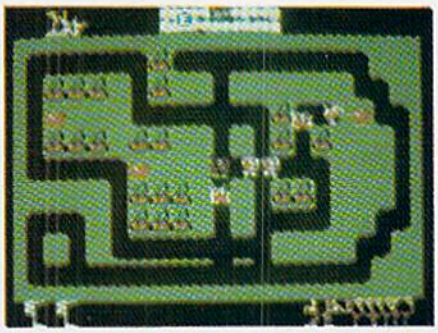
REVIEWED BY JOHN JERMAINE

# Mr. Do!

**Computer:** Commodore 64
**Publisher:** Datasoft
19808 Nordhoff St.
Chatsworth, CA 91311
**Medium:** Disk/Tape
**Price:** $39.95





If I walked up to a group of people on the street and asked them what the name *Mr. Do!* meant to them, I'm sure that I'd get some interesting answers. Some people would immediately associate the name with a children's toy or television program, while others might claim he's a dearly departed foe of James Bond. Actually, *Mr. Do!* is a very popular video game that has recently been translated by Datasoft to the 64.

The object of *Mr. Do!* is quite simple. Travel around each field of play, picking up cherries and eating treats, while avoiding the monsters that chase you. Each screen has a different colored field and a tunnel in the shape of a letter or number. These tunnels are where the monsters run loose, until your wandering has created new tunnels. It pays to travel through old tunnels as much as possible, and avoid getting trapped in an area without an exit.

Monsters present an interesting problem in the program, because their touch means death. They're drawn to you as if they had radar, so avoid these foes whenever possible. There are four types of monsters: regular monsters, box monsters, henchmen, and diggers.

Regular monsters (red and white) are the most common species of monster. These creatures are a little unsure of their actions and frequently hesitate, giving Mr. Do an extra second or two to react to their attack. These characters are also frozen in their tracks when a treat is eaten, and remain dormant until a boss monster is destroyed.

The boss monsters are the long-legged blue-and-white creatures. Boss monsters have the habit of appearing when a treat is consumed and after 5,000 points or more are scored. Destroy these foes with a powerball as soon as one appears, or they'll mix with regular monsters and be protected from your attack.

Mr. Do! *truly brings the excitement of arcade action into your own home.*

Henchmen are blue blob-shaped creatures that travel in packs, move very rapidly, and appear a moment after the treat's been eaten. Keep away from these characters, because they're the fastest monsters in the game and some can't be killed.

Diggers are the only monsters that have the ability to dig tunnels. When dealing with these monsters in general, a smart player will travel around the screen until a pack of enemies develops behind him. At this point, lure your enemies into a trap by tunneling up underneath an apple, and dropping it on them. After all of the regular monsters have been released from the center of the screen, a treat, in the form of cake or pudding, will appear there.

Now you have a decision to make: Consume the treat for big points and face the fury of the henchman, or continue eating cherries while battling regular monsters.

Joystick controls in *Mr. Do!* are so simple to use, that even very young children can play the game. The powerball, released by pressing the fire button, is also very easy to use. This lethal weapon destroys any type of monster on contact. The player should remember to use the ball to destroy boss monsters, while keeping it handy at other times as an emergency weapon, because once a powerball has destroyed a target, you're helpless for about seven seconds.

The graphics generated in the home version of *Mr. Do!* are very close to those found in the original arcade game. Object graphics, like apples and cherries, are simple colored figures with an additional color or two being added to give details to the image. Mr. Do, the hero of the game, is a white-faced clown dressed in traditional circus attire of red-and-white polka-dots.

Two animated graphic sequences in the program provide a break from the game. Whenever a player completes a group of three scenes, a screen shows the score of each while a monster races across the screen. It has good reason to run so fast, because Mr. Do is in hot pursuit, carrying an apple to drop on the beast. Another special screen comes up when you've earned an extra man. This screen shows our favorite clown standing beside a monster. Mr. Do badgers the monster until it raises a white flag. While waving the flag, the monster surrenders an extra man to the bottom of the screen.

Several variations of circus music are played throughout the program, adding a touch of the "Big Top" to the game. The player also knows when a boss monster appears, because the music changes.

After working with *Mr. Do!* for several days, I judge it to be one of the best all around games for several reasons. First of all, the program appeals to both children and adults. Children above the age of five should be able to understand and play the game, while adults like its fantasy aspect. *Mr. Do!* also offers a variety of challenges. The program is a fine blend of excellent graphics, unusual sounds, and well engineered animation. This game truly brings the excitement of arcade action into your own home. C

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REVIEWED BY CHERYL PETERSON

# Quink

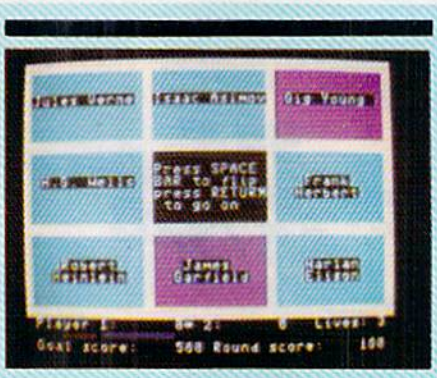
**Computer:** Commodore 64
**Publisher:** CBS Software
One Fawcett Place
Greenwich, CT 06836
**Medium:** Disk
**Price:** $34.95

Think quick! Here's a series of words. Tell me which ones don't belong: Mojave, Caspian, Great Bear, Painted, Emerald Seas, Gobi, Alps. The first, fourth, and sixth are deserts. All the others should be eliminated. Caspian is a sea, Great Bear is one of the largest lakes, Mohegan is an American Indian tribe, Emerald Seas is a passenger liner, and the Alps are a mountain range.

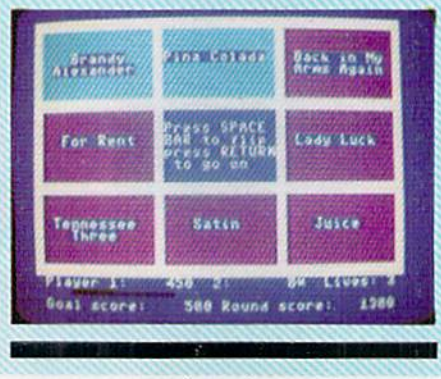
If you're wondering who cares about the wrong answers, I have to warn you—*Quink* is a game where the wrong answers can be as important as the right ones. When the eight words light up the screen, you have a finite time to identify the ones that don't belong. If you aren't fast enough, you lose points. If you make an incorrect guess, you lose a "life." Each *Quink* game consists of three lives.

Fortunately, at the end of each screen, *Quink* lets you compare the clues with their categories. By careful observation, you can learn the ones you don't already know. And some of them are pretty off the wall. How many of the top 50 stocks can you name? Is Orlon a fabric or a man-made fiber? When you've only got a few seconds to make a decision, it's tricky. Being sure of an item's category can make a critical difference.

*Quink* is not an easy game, as it requires knowing a lot of trivial information. It is well designed and enjoyable, though. Since trivia games are quite popular, it's not surprising that CBS would develop a game like this. What is surprising is that it is so different from the rest. Rather than requiring instant recall of dates, places, names, or records (who won the Cy Young Award in 1972?), *Quink* encourages you to make split-second comparisons of words and recognize their similarities. Admittedly, some of the items are really subjective, but because you get the relevant categories with each clue, it isn't too difficult to adjust to *Quink's* idiosyncrasies.




*Rather than requiring instant recall of dates, places, names, or records,* Quink *encourages you to make split-second comparisons of words and recognize their similarities.*




With five general areas (fame, pop culture, science and nature, imagination and general knowledge), there's something to appeal to just about any taste. If you have a hard time making up your mind, there's also a "mixed bag" category.

Fame deals with people whose names may or may not be familiar, depending on your interests. Some of the "people" are fictional: characters from Dickens, the Star Wars series and cartoons, for instance. This may sound like an easy category, but how many Pulitzer prize-winning playwrights can you name? Can you name any Nobel laureates for literature?

Pop culture really gets into some strange (and deceptive) subjects. "Puppets," "Ventriloquist's Dummies," "It's Howdy Doody Time," "Sesame Streeters," "Best-Selling Novels of the Year," and "Pulitzer Prize Fiction" could give you a rough time. Where would you put methadone—in "prescription drugs" or "controlled substances?"

For the most part, each item falls into only one *Quink* category. Although there is most certainly a Hilton hotel in Las Vegas, Hilton falls into the "Hotel Chains" category rather than "Las Vegas Hotels." And although some metals and gases may rightly be categorized as "Chemical Elements," *Quink* makes a differentiation between them. The only way to learn which goes where is to confirm your answers at the end of each screen. The next turn doesn't commence until the RETURN key is pressed, so you can switch back and forth easily between the items and their correct categories using the space bar.

Because some categories are so trivial, even living in a particular geographic area can be an advantage. Most people would have a hard time with a screen that listed Song of America, Nordic Prince, Norway, Titanic, Austin, St. Croix, and Bull Run. With little trouble, most players would recognize Bull Run as being the only famous battle and Austin the only state capital. Being a Floridian, I'm within a few hundred miles of St. Croix and know it's a Caribbean Island. And our last apartment overlooked the Port of Miami, home to the Song of America, the Norway, and the Nordic Prince. All are passenger liners. Most players would put the Titanic in the same category. But no, it belongs in the "Famous Ships" category.

Within 4,500 clues and eight items per screen, this game can have millions of variations. Even at the easiest level, it's no party. Although billed as a family game, I question how many youngsters will be able to effectively compete in this game. The categories are quite complicated, and even a well

*Continued on Pg. 133*

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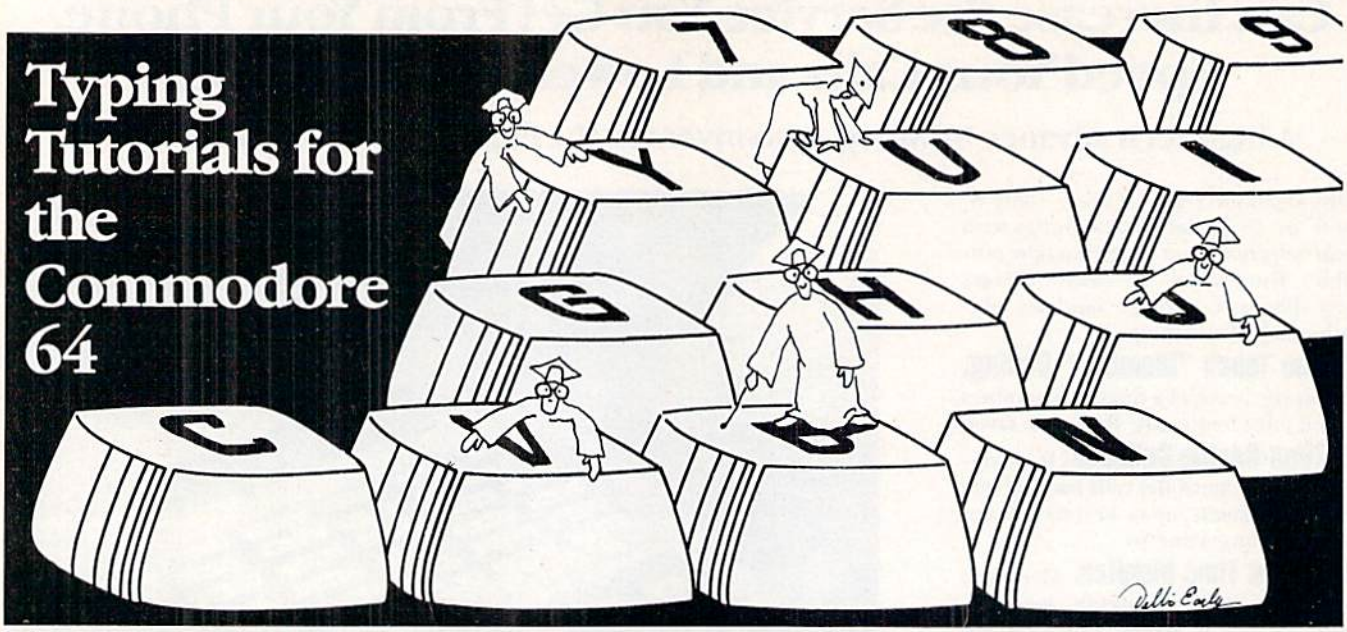
BY WALTER SALM

# Typing Tutorials for the Commodore 64

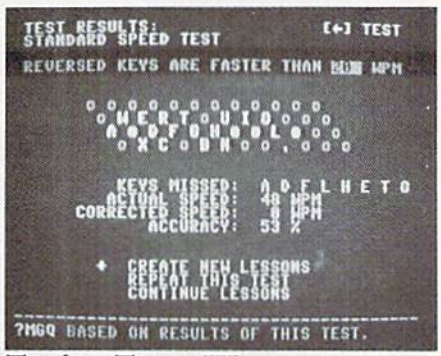


The last thing in the world I thought I'd need would be a typing tutorial program. But one day, my wife decided she wanted to improve her own typing skills and asked what we had in the way of tutorials. I was chagrined to discover that the cupboard was bare.

So I started to nose around to see what was available in the way of tutorials. I have tested six typing programs here for the Commodore 64, and each one has its own particular points—both good and bad. Some are geared for teens and adults, while others are excellent introductions to the keyboard for youngsters. Some are deadly serious, some are whimsical and fun. Some are downright funny.

As a reviewer, I use at least four different computers. The sad part of this is that the keyboards are all different, and while I may be a speed typist on one key arrangement, when I switch computers, I have to switch gears and relearn the positions of a number of keys. In a way, this makes me almost a beginning typing student all over again, which suits the purpose of these reviews just fine.

Which one of the bunch did I like the best? That's really hard to say, since I found that each one of these programs had both strong points and characteristics that I didn't particularly like. The typing tutorial that you ultimately choose will depend on your own time frame, your needs as a typist, and your age.




## Typing Tutor III

It all started with my first look at *Typing Tutor III* from Simon and Schuster. This program comes in a regular hard-cover library-shelf book with the disk nicely sealed in a vinyl sleeve in the back. I must admit I'm a little partial to this program, since it's the first typing tutorial I've had a chance to try on a variety of computers. All three versions have the same ingredients, although the on-screen graphics are better for the 64.

The big problem with any typing tutorial is that it can get deadly after just a short time. If you're serious about learning to type or want to improve your speed, then a serious program is appropriate. But even with a serious program like this, an element of "gamesmanship" enters the picture with the "Letter Invaders" game.

With "Letter Invaders" (loaded as a separate program and not selectable from the main *Typing Tutor* menu), your typing speed and skill really get put on the line. *Space-Invader*-like letters start to drop from the top of the screen. Typing that letter correctly before it hits the bottom will "shoot it down," but it is quickly replaced by other letters, falling in random patterns across the top of the screen.

As you get better and more accurate, more letters, punctuation marks and numerals fall, and they come faster and faster. Eventually, even the best typist will "lose" this game, with missed letters punching holes in the "ground." When the ground's all gone, the round ends, and the program prints your scoring statistics on the screen.

In the straight tutorial section, you get your pick of drill on letters and numbers, and these, too, get harder as you improve. At the end of each two-line drill, you see an evaluation of your performance, along with raw speed, adjusted speed (after subtracting the errors), your best (fastest and most accurate) keys, and the keys that still need some work.

You can elect drills, practice sessions, and speed tests. At the end of each session, or sooner if you choose, you can see a graph of your results.

While *Typing Tutor III* is an excellent program and one I highly recommend, it's all work and very little play aside from the "Letter Invaders."

## Typing Tutor

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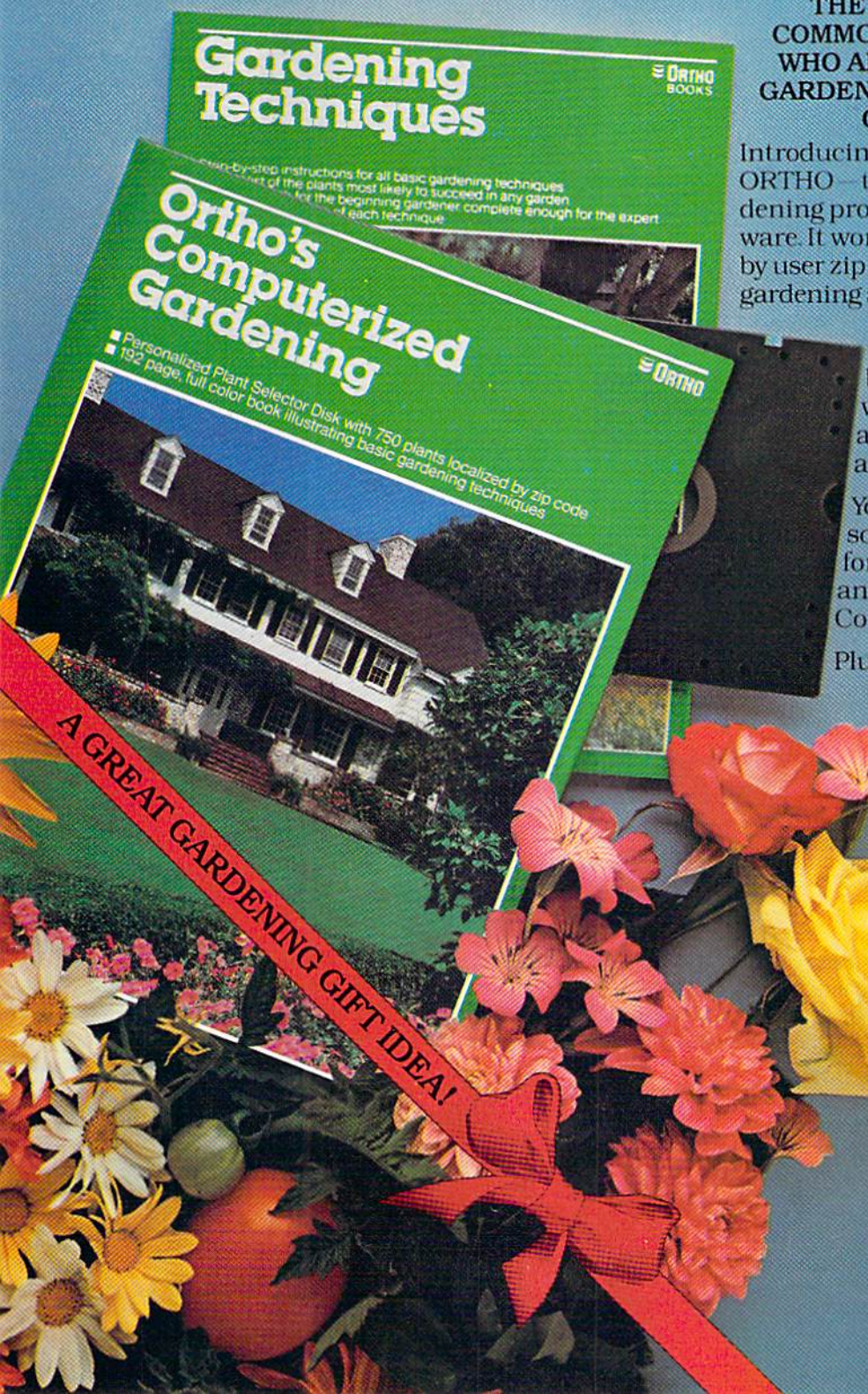


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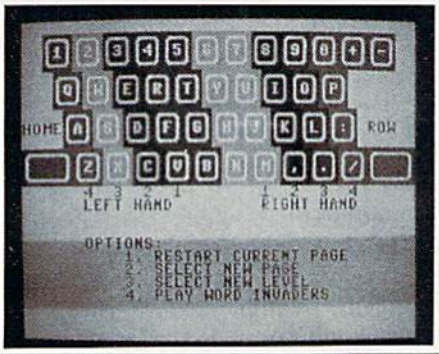
program, but that's where the similarity ends between *Typing Tutor* (Academy Software) and *Typing Tutor III*. The loading is easier, too, since the "Word Invaders" game section loads directly from a four-line menu. You don't have to leave the tutorial to get to it.

The software comes in dual formats—the package contains both a disk *and* a cassette tape. These people are obviously leaving nothing to chance, and are to be applauded for it.

The drill-and-practice section is somewhat uninspired, but it forces you to learn your basic keys very well indeed. The one thing I found very disquieting about this drill is that no word wrap is used. Instead, when you finish a line of drill, you must hit the RETURN key—not a good habit to get into, since most word processing programs you are likely to use never make use of the RETURN key except to end a paragraph. It's a small point, but one that I feel is important, because being used to word wrap (the software automatically moving to the next line when you run out of room), I racked up a lot of errors by forgetting to hit the RETURN key.

Yet the program has definite learning and practice value, and while the feel was different from most of the other tutorials I tested, it was indeed an excellent piece of software.

The "Word Invaders" game is cute, but instead of shooting down individual letters, you have to type the words as they appear in a line of text. You can choose your own skill and speed level, too, from a total of 16 different possible combinations. At the higher levels, a spaceship prints out a line of words faster than I can type, and as the bottom line of type that I'm working on gets closer and closer to the ground, I tend to get just a little frantic.




But unlike *Typing Tutor III*, there's an end in sight. You can actually "win" this game, and in fact, I won at all levels, including the highest one. But I couldn't maintain a consistently very high score at the highest level; some word sets are harder than others.

In general, I'd say the "Word Invaders" is a lot less threatening than *Typing Tutor III*'s "Letter Invaders," and perhaps somewhat more related to the real world of typing. Like its near-namesake, this program is for serious typing learners, in spite of the fact that it does include a game for practice purposes.

## Keyboard Cadet

Maybe I'm just so full of the wonder of what computers can do that the choices available in this program were a bit mindboggling. The first choice in *Keyboard Cadet* (Mindscape) is to pick between the Qwerty and Dvorak keyboard arrangements. Frankly, this is the *only* typing tutorial I've seen that actually will teach you the Dvorak layout.

In case you're not familiar with it, the Dvorak keyboard was invented in 1936 as a more sensibly arranged keyboard that groups more frequently used keys in clusters to help you to type faster. The standard keyboard that most of us use is called the Qwerty keyboard, because this is the way the first six letters of the top row are arranged. Qwerty is used on most of the world's typewriters and keyboards. But new options are now being made available. I've seen accessory keyboards for other computers that offer the choice of switching to either keyboard.

In the nitty-gritty of the lessons and practice sessions, the screen shows you at the helm of a spaceship with a computer keyboard pictured in the bottom half of the screen. The upper half is a view-screen showing a starscape, and groups of letters or words flash up there for you to type. While you're typing the word, an alien spaceship appears, and if you finish the word correctly and hit the space bar, you manage to shoot the alien to smithereens. But if you're slow, or can't get the word or group finished, beware. You lose one of your "home" ships (you start with five) each time you miss or run out of time.

*Keyboard Cadet* also offers an excellent variety of timed typing tests that are non-repetitive. This is an especially good feature, since such timed tests in *Typing Tutor III* use the identical text material each time. The only problem with the timed test in this program is that the letters are too small for the typical composite color monitor screen. The result is that they tend to blur somewhat and can be a little hard for these age-ravaged eyes to read. I know I should get new glasses, but I can still read an 80-column screen with no problem. My conclusion is that this is a small problem with the software.

The words and letter groups in the spaceship practice sessions don't suffer from this shortcoming, however. If anything, the letters are so huge you'd have to be blind not to be able to read them easily. This program is the newest of the ones tested, so perhaps a comparison is a bit unfair, since it has many excellent elements of graphics included—along with a very good set of practice files.

One disquieting note: It's not a "full-load" program, so each time you start a new drill or exercise, there's a lot of disk-loading activity. In fact, the disk drive almost never seems to stop running while you're using the tutorial. On the plus side, this means that the master program has less to load, and will load that much faster.

## The Wizard of Id's Wiztype

If comic-strip characters turn you on, *Wiztype* from Sierra can make typing drill and practice very palatable, indeed. For that matter, its comic orientation will make it much more inviting for children to take their first typing lessons.

But for all the fun of having familiar, friendly cartoon characters help you along, this program is deadly seri-

ous, and like all good typing programs, won't let you get away with any laziness. When you start a drill, exercise, or practice paragraph, *Wiztype* really keeps your nose to the grindstone. However, if the phone rings or you have to pause, the F7 key lets you put the program on hold; touch F7 again to restart the clock.

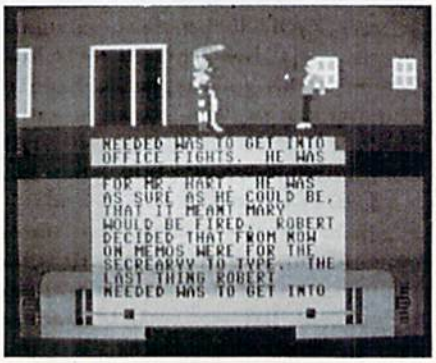
The practice and drill options pit the Wiz against the Sprit, who changes into a fire-breathing dragon if you're a poor typist. When this happens, he gives poor Wiz the flame-thrower-breath treatment (he must eat a lot of hot peppers), reducing Wiz to a pile of ashes. To save Wiz, you have to keep up with the words or letter groupings placed up on the screen.

This can be frustrating at first, since I for one have a tendency to set the skill level too high. After all, I am a speed typist (for whatever that's worth), and therefore reason that I should select a high speed. But the drill words tend to get ahead of me, and instead of being rewarded by the Wiz smiling at me and giving me bonus points, I see him get cremated.

A nice feature of *Wiztype* is the paragraph typing session. It's a close proximity to more real-world typing than the drills and practice words, and you can pick your poison from a menu that lists such items as the Gettysburg Address, an extended quote from Shakespeare's "Hamlet," and a paragraph of really fascinating typing trivia about world speed-typing record holders. In this case, I found myself getting more interested in the material than in the typing test itself.

In keeping with the comic-strip theme, when you make the menu selections for the paragraph practice, you can elect to have Bung, the king's perenially drunk court jester, keep pace for you. You then see Bung jumping from letter to letter on a pogo stick to beat out the appropriate rhythm for the typing speed you selected. A hint here for more positive thinking: Set the speed slower than you normally would. Otherwise, you'll start to feel intimidated as Bung catches up to you or gets ahead of your own typing pace. A prompt at the bottom of the screen keeps running track of your net typing speed as you go along—subtracting for errors automatically.

Like most of the other software reviewed here, *Wiztype* is not a full-load program, but will load needed materials from its menus fairly quickly when you change from drill to paragraphs or whatever. It's well done, and I can recommend it for anyone who has ever been intimidated by typing.




## 9 to 5 Typing

Of all the typing programs reviewed here, this one from Epyx is undoubtedly the most fun, although I personally feel that the program has a few drawbacks. The opening tutorials—all menu-chosen—start the rank beginner from proper finger placement and offer programs for individual letter practice and then to word clusters. The fun starts the minute you start practicing. This program is peopled with animated computer-screen characters that emulate the stars of the movie "9 to 5," complete with Franklin Hart chasing Dora Lee around the office to the accompaniment of some upbeat, funky music taken from the soundtrack.

Both the chase and the music have a definite bearing on this typing drill, since the music provides an introductory beat to prepare you for the rhythm of the typing practice. The chase and its results depend on how well or poorly you type. If you type enough correct letters, Dora Lee is able to increase her lead ahead of her boss, and at the end of the drill she starts chasing him! Make too many mistakes, and he catches her. You want to keep at it because it's so much fun, and that's all to the good.

When you practice the home and top row keys, Judy starts shooting at Mr. Hart, and takes a shot at him with each correct letter you type. If you make too many errors, Hart grabs Judy and her rifle. For the full alphabet practice, Dora Lee twirls her lasso and if you do well, she gets to rope Mr. Hart. Too many errors, and she gets tangled up in the rope herself.

Now the bad parts. For one thing, there is no word wrap; instead, you have to hit RETURN at the end of each line. When you reach this point, the program rings a typewriter-like bell to signal time for a return. This is fine if you're learning to use a typewriter; it's not so fine if you plan to spend your time typing at a computer which usually has automatic word wrap.

The other problem I had with this drill was the two-line display. Maybe it's my own predilections that got in the way, but I found myself trying to type the second line of text instead of the first. The screen is set up in such a way that your eye falls naturally on that line, and the result was that I cranked up an impressive number of typing errors.

Other practice sessions include phrases and sentences, tales and facts of paragraphs, and then an optional section in which you can create your own typing programs or pick a number of special options. The really interesting aspect of this choice is the fact that you can create your own disk of exercises.

Overall, I'd rate *9 to 5* very high on the list for ingenuity, positive feedback to the typing student, and just plain fun.

## Mastertype

This tutorial from Scarborough is the only one that comes on two disks. It's also available in a ROM cartridge version, which is designed to work with a cassette tape recorder. The ROM version doesn't contain some of the features of the disk version, though, in spite of the fact that it offers the convenience of in-

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stant loading.

The program contains the usual home key, and upper- and lower-row key drills. A graphic of the keyboard shows where to place the finger for each letter that is to be typed. A miniature "wizard" keeps time for you, and if you make mistakes, he comes out of his corner and "shoots" the wrong letters, reversing them on the screen.

Like all of the other tutorials, this program is menu-driven, and you can exit to the master menu at any time with a press of the F1 key. It provides a "game" mode, in which two wizards shoot down circling letters with lightning bolts as you type the right keys. In addition, you can set your level and speed, and the program keeps score for you with a running cumulative total.

The game on the second disk pits your saucer-shaped spaceship against four enemy vessels which approach from the four corners of the screen. You shoot these bad guys by typing the letter displayed in each ship's corner. If you take too long, they hit your spaceship and destroy the shields.

*Mastertype* lets you create your own lessons and save them to disk—a definite advantage for specific kinds of drills. The manual recommends using a separate data disk for this. The option I found most fascinating presents you with computer BASIC programming words to type—a definite plus in learning to type accurately for programming.

Overall, while *Mastertype* may not be as much fun as some of the other programs and may seem a bit heavy-handed at times, in many ways it was the standout of the programs tested, mainly because of its focus on the computer keyboard instead of the typewriter.

**Typing Tutor III**
Simon & Schuster
1230 Avenue of the Americas
New York, NY 10020

**Typing Tutor**
Academy Software
P.O. Box 6277
San Rafael, CA 94903

**Keyboard Cadet**
Mindscape
3444 Dundee Road
Northbrook, IL 60062

**Wiztype**
Sierra
P.O. Box 485
Coarsegold, CA 93614

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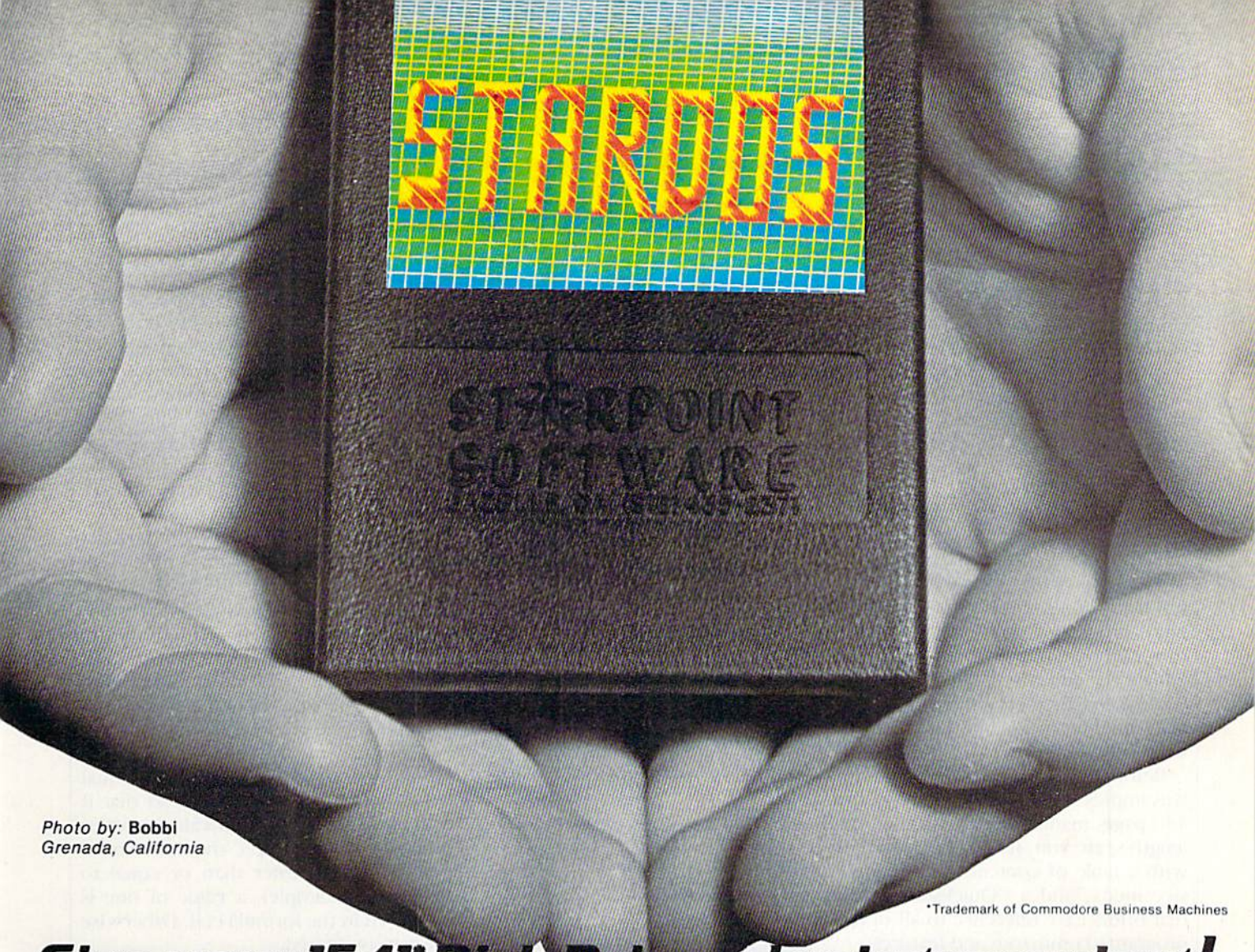


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REVIEWED BY KEN SILVERSTEIN

# Better Working Spreadsheet

**Computer:** Commodore 64
**Publisher:** Spinnaker Software
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**Medium:** Disk
**Price:** $49.95

*This spreadsheet is easy to use, loaded with features, and has by far the best documentation I've ever seen for any applications program.*

Simple. Powerful. Fast. Easy-to-use. Outstanding. I can't seem to decide which word best describes Spinnaker's *Better Working Spreadsheet*, a full-featured spreadsheet with simple word processing and the search-and-sort capabilities of a data base. But whichever adjective I finally choose, Spinnaker's first in a series of home and small-business applications software is a winner.

Before I even loaded the program, I was impressed with the quality of the 140-page manual. But don't let its length scare you. It is well organized, with a table of contents, comprehensive index, and a "Quickstart" card that offers easy reference to all of the program's commands and features.

But this manual is more than just thorough, it's readable. Each feature, each command, and each function is presented clearly and supported by an example. And, of course, at any time you may access any of five different help screens (just type CTRL A). These provide you with information and menus covering all the spreadsheet operations.

The introductory unit explains basic spreadsheet operations: formatting a data disk, cursor movement, and data entry and editing conventions, along with an eight-page sample application which incorporates the most commonly used features and commands.

*Better Working Spreadsheet* has a 250-row by 100-column format. Its word processing feature allows you to surround your printed data with explanatory paragraphs, or include your spreadsheet as part of a brief correspondence. As in complete database-management programs, you can search and sort a column of entries either alphabetically or numerically. And *Better Working Spreadsheet* lets you display a group of data graphically with high-resolution bar graphs.

As with all spreadsheets, you may enter data as labels, values, or formulas. But with *Better Working Spreadsheet*, you can provide "prompts" which explain what information is expected at any particular cell location.

*Better Working Spreadsheet* lets you save all or part of a spreadsheet to disk or tape, and combine any number of different spreadsheets to generate reports. You can even "overlay" one set of data onto another larger spreadsheet.

The Replicate command lets you copy any cell or group of cells to another area, and you may choose whether formulas will be copied exactly or in "relative" form. With many spreadsheets, you must type in the actual coordinates of the cells that mark the beginning and end of the area you wish to copy. *Better Working Spreadsheet* offers the time-saving option of simply moving the cursor to a cell and pressing RETURN, causing the cell's coordinates to be automatically entered on the command line.

A Titles command lets you fix designated row or column headings (or both) so that they will remain in place as you scroll through cell entries. You can insert rows and columns where you need them, and can adjust your column widths from 1 to 38 characters wide, either in a given column or "globally" throughout your spreadsheet.

There are over 30 mathematical functions available, from simple addition to natural logarithms, absolute values, a random number generator, powers, roots, and trigonometric functions. You can total a range of values (SUM), or count them (COU), find the largest one (MAX), the smallest (MIN), or the average (AVG).

You may incorporate the logical operators (less than, greater than, equal to) within a formula entry so that if the result of any given calculation or comparison is true ("the contents of cell B15 is greater than or equal to 25," for example), a value of one is entered in the formula cell. Otherwise a zero is entered.

But the logical operators are most powerful when combined with the Boolean operators (AND, OR and NOT) to create the IF function. More often called "IF/THEN," these allow you to say, "If something is true, do X. If it isn't true, do Y."

And if that's not advanced enough for you, there's a Net Present Value function which will calculate the current worth of a range of values before an interest period at a specified interest rate. A feature called "programmable interaction" will also let you answer "what if" questions (often called "forecasting") by calculating countless values until a pre-defined situation is achieved. For example, this function can calculate how many more base hits Billy must get before his batting average reaches .400.

Entry of all commands is a snap, with only a few simple keystrokes. All commands begin with either the CTRL key or the slash. Just keep the reference card handy until you learn them all.

The Configure program allows you to change any number of default values. These are the pre-established values for certain features like column width, background or text color, lines per printed page, which keys will repeat when held down, and other more technical information. Any changes you make here are saved as a special file called DEFAULTS, and will affect *all* files created with the program. But you may also select this feature while designing a specific spreadsheet via the Options command. Alterations made this way will be saved only with a particular spreadsheet. For example, if you wished to modify the margin size or choose compressed print for a certain file, but not all files, you'd access the Configure page through the Options command. You may also load and incorporate any *VisiCalc* or standard DIF data files, as well as any text files created by another program.

The manual ends with a Case Study section which reinforces what was presented previously via a step-by-step home finance tutorial. This Case Study lesson is so well done, as a matter of fact, that someone with spreadsheet experience might just read this, grab the "Quickstart" reference card, and get to work.

You probably think that this is where I'll list the things about this software that I didn't like or found difficult to use, or those features I'd really have liked to see but found missing. And now's when you expect to be warned about those nasty little typos in the manual that will confuse you and lead to countless hours of frustration. Well, you can relax. Because I've been using this program for over two months, experimenting with it on an assortment of applications, and I've not found it lacking in any way.

To this point, I've used and/or reviewed at least ten different spreadsheet programs for a variety of computers, and have yet to find a better package. (And, by the way, once you've filed the warranty card, Spinnaker will send you a back-up copy of the program for $5.00!) It is easy to use, is loaded with features, and has by far the best documentation I've ever seen for any applications program. C


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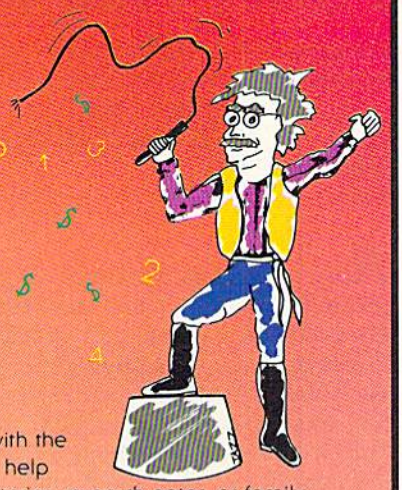

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REVIEWED BY AL WILLEN

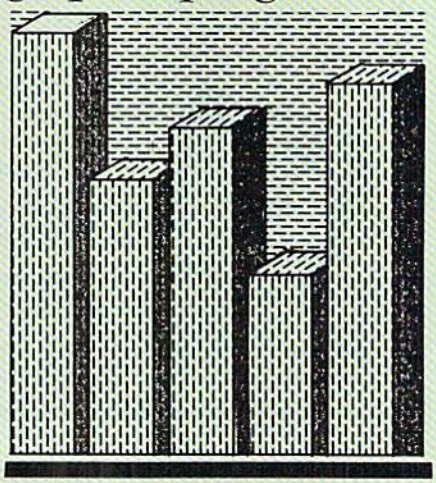
# Power Plan-64

**Computer:** Commodore 64
**Publisher:** Abacus Software
P.O. Box 7211
Grand Rapids, Mi 49510
**Medium:** Disk
**Price:** $49.95

After reviewing hundreds of programs for the 64, I feel that *Power Plan-64* is one of the best programs ever written for the Commodore, giving *Lotus 1-2-3* a run for the money. My opinion is especially bold since *Power Plan-64* costs about 14 times less than *Lotus 1-2-3*, and is much easier to learn and use. Yet the calculating power is there.

When you purchase *Power Plan-64*, you are getting two very powerful integrated software packages in one: the *Power Plan-64* "Spreadsheet Generator" and the *Power Plan-64* "Power Graph" graphics program. Both complement each other perfectly.

*Power Plan-64 is really two very powerful integrated software packages in one: a spreadsheet generator and a graphics program.*



## Spreadsheet Generator

The Spreadsheet Generator allows users to perform complex statistical problems, simulations, forecasts, and "what-if" calculations easily. The CRT screen is broken up into small memory compartments called cells. Each cell is labeled with a unique name, taken from the horizontal *column* axis (alphabetical letters from A to BK) and from the vertical *row* axis (numbers from 1 to 255). The "spreadsheet generator" has 255 rows by 63 columns, or a total of 16,065 unique compartment cells. Users can assign three different types of data into any of these cells: numerical data values, mathematical formula values, and textual information.

Textual input is important because it allows the user to self-document the spreadsheet, creating column and row headings for easy interpretation. A numerical value is nothing more than a number (integer, floating point, exponential, randomly generated) loaded into a cell as "fuel" for subsequent calculations. Formula values define the specific mathematical operations to be carried out on the raw numerical data. Formula values allow for all standard mathematical operators, plus all standard functions available to the 64's BASIC vocabulary (ABS, COS, SIN), plus five newly defined *Power Plan-64* functions. These specialty functions include totalling the mathematical result of cells, calculating the average value of a group of cells and number of value cells in any block, and giving the largest and smallest mathematical value of the cells.

As is typical in all spreadsheet programs, only a small window of the spreadsheet can be viewed at any one time. This, however, poses no problem, thanks to cursor directional keys, and a "GOTO" movement instruction.

The display area is divided into three portions: a top section which allows for program/user communications (data editor, available memory, cell coordinate reference frames), the central section which contains the spreadsheet proper, and a bottom section which contains an active main menu (accessible via the "F7" function key). Other editing routines are also available through various function keys.

## Graphics

Power Graph is a valuable analytical tool which automatically generates various graphs (based on your spreadsheet) to help you better understand trends and relationships. Power Graph itself is worth the entire cost of the *Power Plan-64* package. The graphs are extremely detailed and accurate.

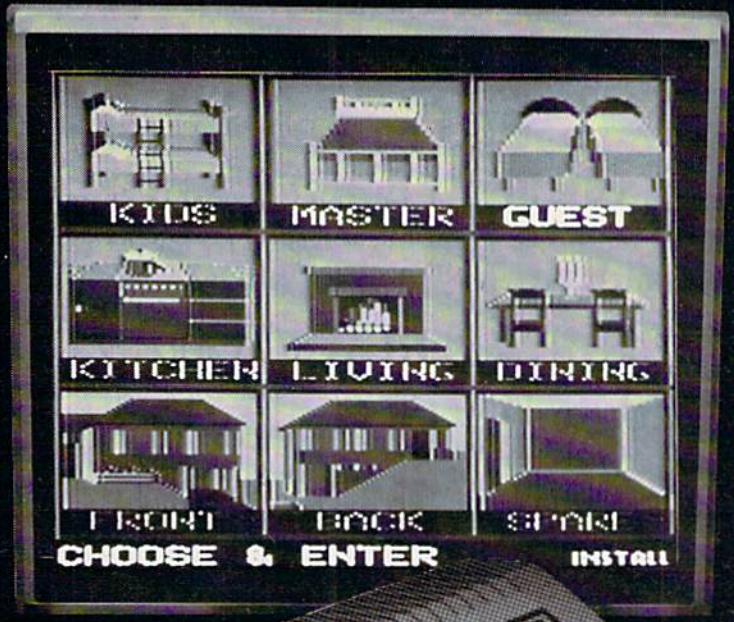
Power Graph is especially valuable because it works on any section of a user's spreadsheet, and can visually display the data in a wide variety of formats, including three-dimensional bar charts, uni- or multiple-frequency curve graphs, point graphs, minimum/maximum graphs, and two- or three-dimensional pie charts.

Naturally, all graphs can be produced for soft (CRT) and/or hardcopy printouts. Various graphs can be created simultaneously in several user-defined graphic windows. Also, format masks—even finished graphs themselves—can be saved to disk. Power Graph also contains a built-in text editor so you can label your creations using a variety of different type styles and sizes.

## Conclusion

I recently had the opportunity to field-test *Power Plan-64* in a heavy-duty business situation. Three different spreadsheet programs were generated. One pertained to a cost/analysis problem entailing over a hundred variables, another dealt with an employee IRA annuity situation, and a third involved employee salary breakdowns and tax rates. All spreadsheets were prepared for a well-known Fortune 500 company. (My fellow analysts used *Lotus 1-2-3* and IBM AT computers.) Using *Power Plan-64*, I was able to quickly and accurately complete my assignments. My graphic depictions of simulations were as detailed as those produced using *Lotus*.

*Power Plan-64*'s excellent 207-page user manual allowed me to completely master all of *Power Plan-64*'s features in record time. If I forgot a feature, the user manual and help screens allowed me to quickly zero in on a solution. It was a pleasure to work with this amazing product. I strongly recommend *Power Plan-64* to anyone interested in using spreadsheet programs for business. C

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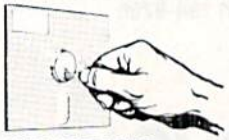

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REVIEWED BY SHLOMO GINSBURG

# ADA Training Course

**Computer:** Commodore 64
**Publisher:** Abacus Software
P.O. Box 7211
Grand Rapids, MI 49510
**Medium:** Disk
**Price:** $39.95

*You can study aspects of programming that are difficult to cover on large mainframes.*

The purpose of the *ADA Training Course* is to introduce Commodore 64 users to the fundamentals of high-level programming. Most users are already familiar with a high-level language, BASIC, but unlike BASIC which is interpreted, the majority of languages such as FORTRAN, PASCAL and ADA, are compiled. The 140-page manual accompanying the course devotes a major part to compilation. Here, the important aspects of checking syntax and semantics are outlined.

The course employs ADA as a medium for teaching, and it should be clear that this package is not designed to provide a comprehensive ADA compiler. This modern language is currently employed by users of large computers in universities and research institutes. In order to compile ADA programs on small machines such as the 64, it would be necessary to read from and write to disk many times. These operations are relatively slow, and they would make the use of the language a tedious effort.

The ADA compiler included here is a very limited version that resembles ADA in format, but does not provide the advanced features of the language. In fact, some of the most fundamental features of high-level languages are omitted altogether. Also, the description of the language in the manual is far from comprehensive. Nevertheless, the choice of ADA as a medium for the course is very good, since it accurately represents the family of modern languages.

The course disk includes an editor, compiler, assembler, disassembler and examples. ADA source programs must be written with the editor. The manual explains how to use it, but instructions are also given on the screen. As a result, it is easy to get acquainted.

A source program undergoes two steps of compilation: the syntactic analysis and the semantic analysis. Once the program is compiled, an assembly language program is created. In case of errors, the compiler provides information to allow the programmer to correct the mistakes. Here, the Commodore 64 user will learn about error analysis performed by compilers—that is, what the computer "expects" from a program.

The package includes an assembler to create machine language codes and a disassembler to analyze such codes. These can be used in conjunction with the ADA programs or for programs written by the user. Naturally, the manual does not cover these topics, so the user must refer to other sources.

Because the emphasis is on the operation of compilers, several aspects of programming are omitted that a beginner might need. Hopefully, these "missing links" will raise curiosity on part of the interested user, and will encourage him to further study high-level programming. Also, the package is sometimes inconsistent. For example, it is mentioned in the manual that saving a program under a name currently used by another file will cause the latter to be erased. But this is true only when the compiler is active. In the command mode, this operation results in an error. Yet, once these inconsistencies are discovered, it is easy to overcome such minor difficulties.

*ADA Training Course* is a hands-on introduction to modern high-level languages. It is aimed towards the Commodore 64 user who wishes to obtain some background that will aid him on large computers and in advanced applications. Both the novice and the experienced user can benefit from the course. Using the friendly environment the 64 provides, you can study aspects of programming that are most difficult to cover on large mainframe systems. C

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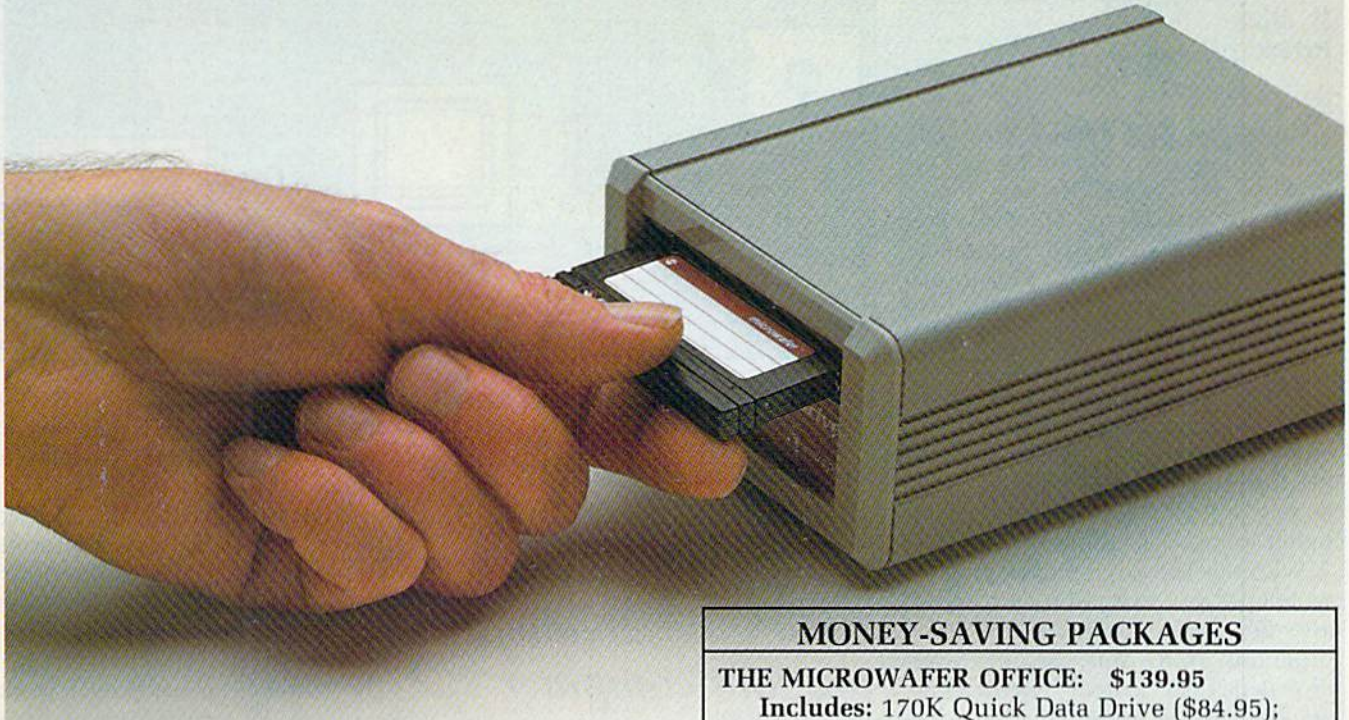

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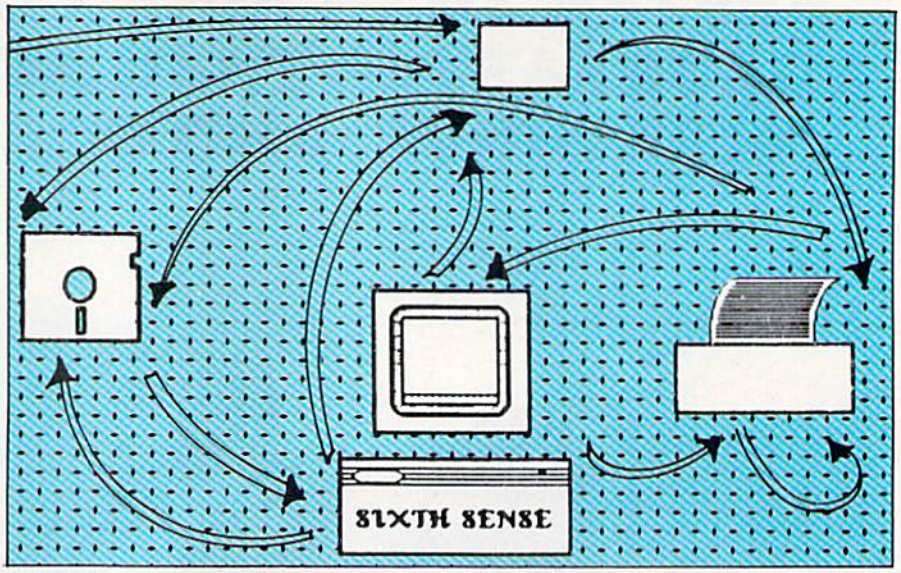
REVIEWED BY ROBERT J. SODARO

# Sixth Sense

**Computer:** Commodore 64
**Publisher:** Microtechnic Solutions
P.O. Box 2940
New Haven, CT 06515
**Medium:** Disk
**Price:** $69.95




Sooner or later, most home computer enthusiasts will venture into the field of telecommunications. Some will want to communicate with other users, while others will telecommunicate to gather the wealth of information available on networks. And, of course, there are still others who may purchase modems because they've seen the movie Wargames and want to access NORAD. (Joe O'Hara of Microtechnic Solutions once confided in me that every time that movie plays, he sells at least a dozen extra telecommunications packages.)

With this increased interest, it is no wonder that so many software houses are developing telecommunication programs. Into this already overcrowded field, comes Microtechnic Solution's *Sixth Sense*. This fully documented and easy to use package serves up the options most commonly requested by telecommunications users, including 16 pre-programmed (or re-programmable) macros, XMODEM, "B" protocol, printer controls, translation controls, split screen, screen editor, conversions, disk utilities, help screens, and a 700-line virtual screen.

The software supports many of the most commonly owned Commodore and non-Commodore peripherals. Included in this lineup are manual, auto and smart modems, a single disk drive, a second drive, or a dual drive. It will also support an IEEE interface, and transparently connected ASCII printers. A list of makes and models is included in the front of the manual.

The 100-page manual contains a hefty (37-page) reference section, briefly describing each option and/or command, and listing the page number where it was first introduced. Directions on how to make a back-up (single or dual drive), how to change the ASCII translation tables, and a six-page glossary wind it up.

The manual assumes that the user has at least a passing familiarity with the world of telecommunications. A description of features appears in the front of the manual, though you might be confused by some of the options if this is your first telecommunications program. This is not a program that you can simply boot and run. It is complex enough to require a complete walk-through prior to on-line use (I know, I tried).

*If you really want to get fancy, you can set up a series of commands that will log your computer on in the wee hours of the morning.*

I strongly suggest that the user first take the guided tour, as it will ultimately save unnecessary phone costs. Since no template is provided, this tour is not only advisable, it would be downright foolish not to take it. All of the various options can be accessed and operated while you are off-line.

Once the program has been booted, color adjustments to the monitor or T.V. can be made by using the colorful title screen as a guide. The next screen is the main menu which displays the 16 available options. The ever-present status line at the bottom of the screen displays the current line number, a 24-hour clock, counter, translation tables, disk read and write channels, and other useful information. By using the Commodore SHIFT/CONTROL and function keys, you choose where you want to go next.

The 700-line virtual screen works like a loop. All screen information is displayed, and scrolls until it reaches the first line again, where it overwrites what was previously there. The real-time clock displays military time and will keep track of your on-line time, sounding a programmable bell to remind you of your ballooning connect-time charges or phone bill. The translation tables toggle between PET and industry-standard ASCII. Disk and printer commands allow for all standard options including creating and scratching files, and buffer and screen dumps.

A fully functional screen editor is provided where messages can be written, stored, and edited. With this function, you can transfer information from screen one (the text displayed) to screen two (the editing screen), alter it, and then return to screen one. In this way, you can build up larger texts than screen two can hold, or edit large texts residing on screen one.

The macros are available while in the editor, so you can program editor functions right into the macro keys,

*Continued on Pg. 132*

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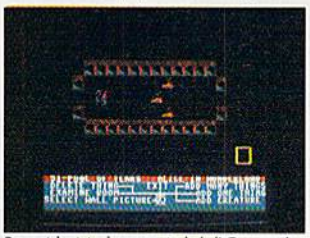

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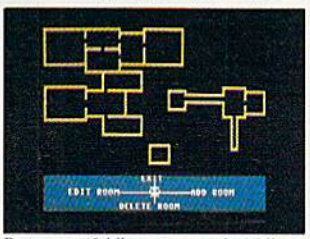

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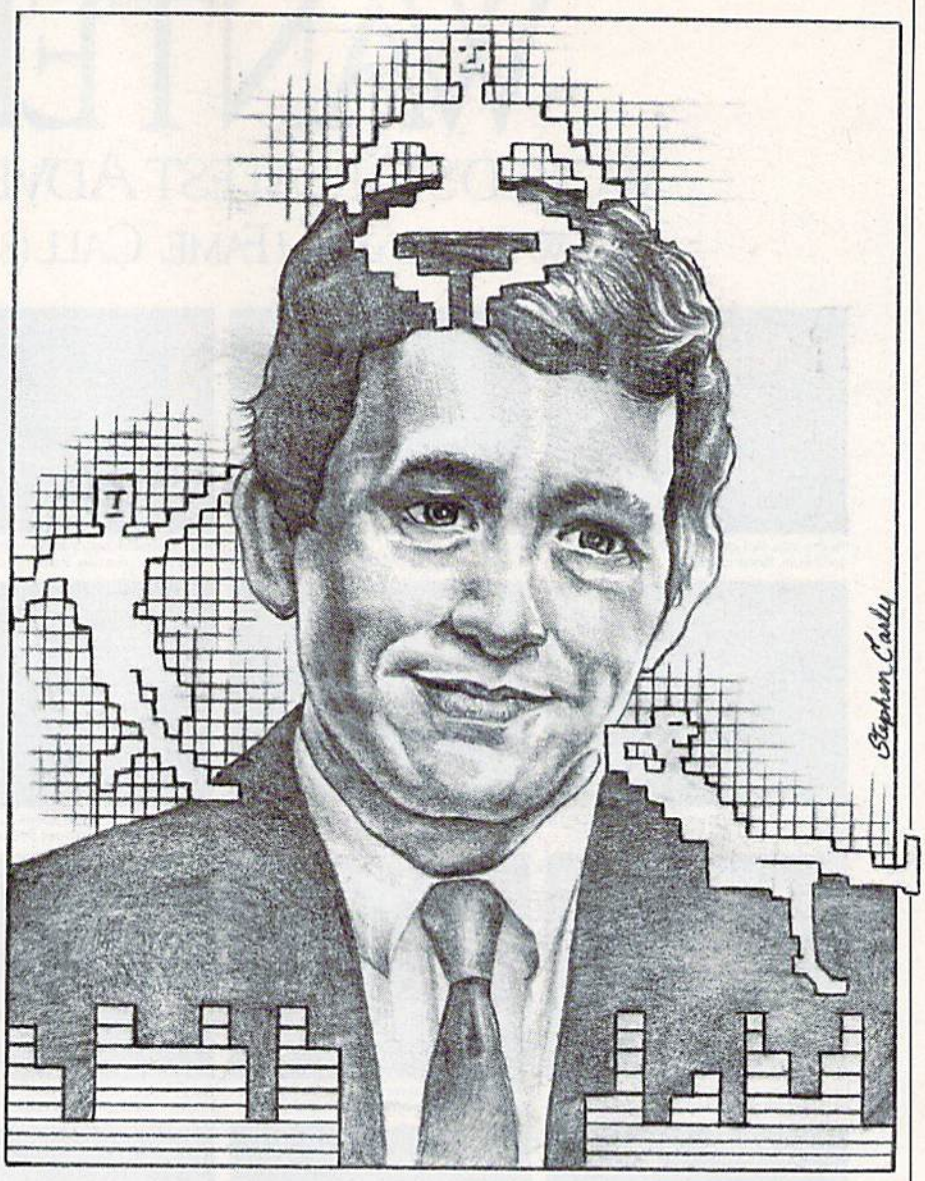
BY LOUIS F. SANDER

# Commodore 128 Sprites and Sprite Utilities




The Commodore 128 has some wonderful commands for creating and manipulating sprites. The 404-page system guide, which comes packed with every 128, is the best Commodore manual yet, and it does an excellent job of explaining the new commands.

But the sprite commands don't do *everything*, and the system guide is an imposing book. This article will help you by guiding you through the manual and by providing some simple utility programs for building your library of sprites. If you follow our examples and do the reading we suggest, you will definitely learn about sprites. If you type in our utilities, you'll definitely find them useful.

If you haven't heard of sprites, they're little graphic objects, designed by you, the programmer, which move around the screen. They can look like angels or aliens, or anything, and they can move in any manner your imagination will allow. Programming sprites is one of the most rewarding computer activities, and with the 128, it's also one of the easiest. Let's start the fun by starting at the beginning.

## Sprites in Memory

To understand sprites, it's helpful to know how they're stored in memory. If you're relatively new to computing, such a subject may seem bewildering, and you may wonder whether you can understand it. If that's the case with you, read this section anyway—it's simple and straightforward, and if some of it sticks in your mind, your effort will be very worthwhile.

In the 128, the memory locations from 3584 to 4095 are reserved for sprites. The computer can handle eight sprites at once, so one-eighth of that block is set aside for each sprite, as shown in Table 1. The block is 512 locations long, with each of the eight sprites using 64 locations. These 512 locations hold only the shapes of the sprites; other attributes, such as color, are separately controlled by BASIC's SPRITE statement.

**Table 1. Memory Locations for Commodore 128 Sprites**

| | Decimal | Hexidecimal |
|---|---|---|
| Sprite 1 | 3584-3647 | $0E00-$0E3F |
| Sprite 2 | 3648-3711 | $0E40-$0E7F |
| Sprite 3 | 3712-3775 | $0E80-$0EBF |
| Sprite 4 | 3776-3839 | $0EC0-$0EFF |
| Sprite 5 | 3840-3903 | $0F00-$0F3F |
| Sprite 6 | 3904-3967 | $0F40-$0F7F |
| Sprite 7 | 3968-4031 | $0F80-$0FBF |
| Sprite 8 | 4032-4095 | $0FC0-$0FFF |

Regardless of what is in the sprite memory area, the 128 treats it as a sprite. Only the user knows whether a given sprite is meaningful or not. To see what's in your sprite area at power up, turn your computer on and execute this:

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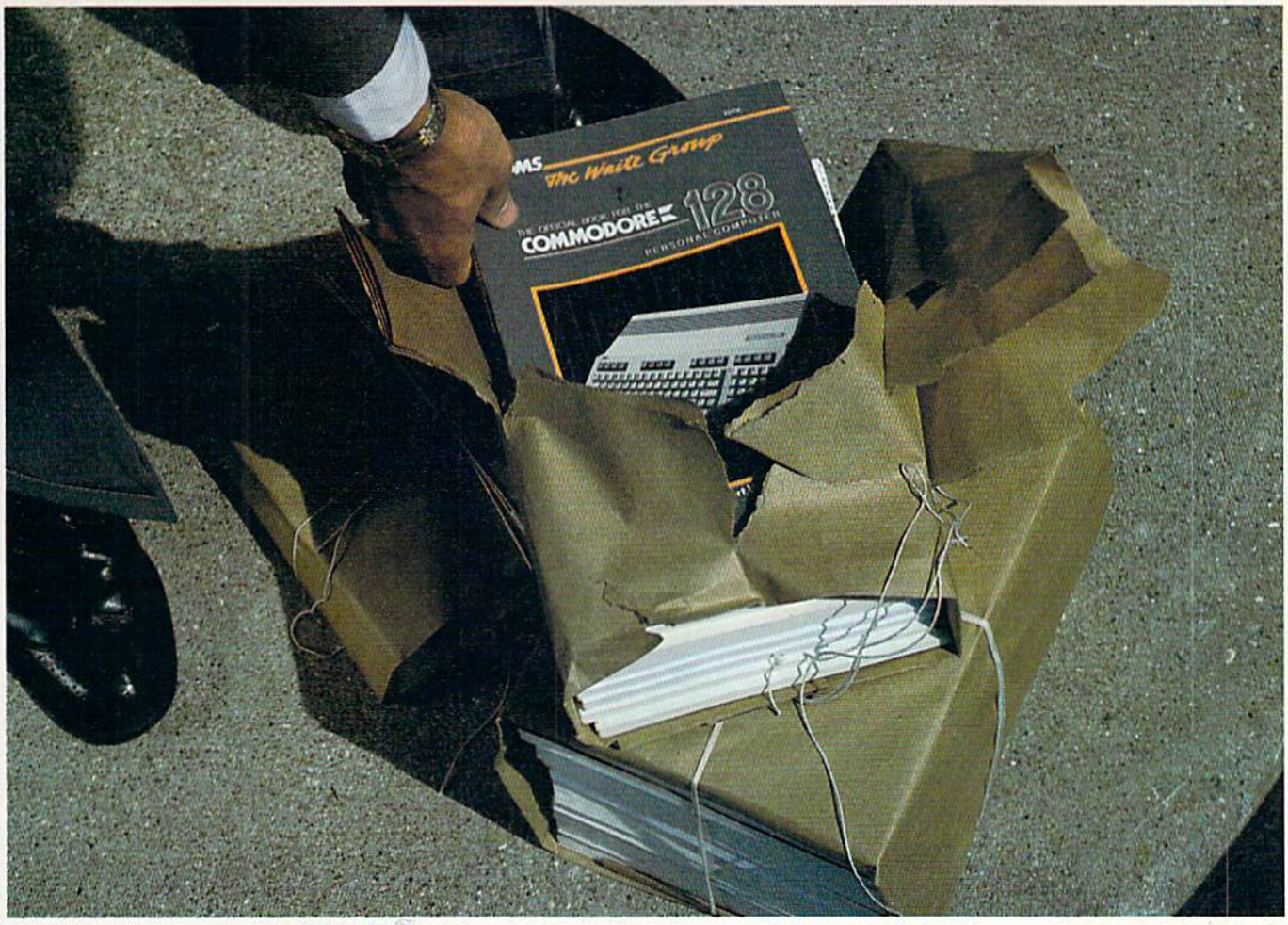


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```
FOR J = 1 TO 8 : SPRITE J,1,2 :
MOVSPR J,35*J,200 : NEXT
```

You've just made all eight sprites visible, colored them white, and positioned them in a row across the bottom of your screen. Their shapes are determined by whatever happened to be in the sprite memory area at power up. Because of the 128's orderly power-up routines, chances are good that some of the sprites are squares, and that some consist of a few or no pixels. You can turn them all into squares by executing:

```
FOR J = 3584 TO 4095 : POKE
J,255 : NEXT
```

With the 128, it's easy to save your sprite area to disk, and to reload it again when you want certain sprites in memory. The keys to it all are the BSAVE and BLOAD commands, which are the 128's tools for saving blocks of memory. Since you now have some nice square sprites in memory, let's save them out to disk. Just execute:

```
BSAVE "SQUARES.SPR",B0, P3584
TO P4096
```

Be sure to type it as shown here; one of the examples in your system guide contains an error. We've adopted the .SPR convention for naming sprite files, since it identifies them in the directory. This identification is important, because sprite files must be BLOADed. DLOADing them causes crashes and other errors.

When you get the READY prompt, execute this line, which will change the appearance of your sprites by putting a three into every location of sprite memory:

```
FOR J = 3584 TO 4095 : POKE J,3 :
NEXT
```

Now execute the following lines, and observe what happens as SQUARES.SPR is loaded into the sprite memory area:

```
BLOAD "SQUARES.SPR"
```

*It's much easier to create sprites with the 128 than it was with the 64.*

By the way, by choosing the proper parameters, you can use BSAVE to save something less than all eight sprites. With SQUARES.SPR in memory, try saving sprite four only, using:

```
BSAVE "SPRITE 4", B0, P3776 TO
P3839
```

If you repeat the routine for changing the contents of sprite memory, then BLOAD "SPRITE 4", you'll see that this is true.

## Controlling the Sprites

A word is in order about making sprites visible and moving them around. The SPRITE statement is used for the former, while the MOVSPR statement does the latter. Both are explained in section 17 of your system guide. The MOVSPR statement is somewhat complex, and we'll save it for another day. You can learn about SPRITE right now. As we give our examples, please follow along by making the suggested entries.

Assuming that sprite four is still visible on your screen, you can make it invisible by executing:

```
SPRITE 4,0
```

You can make *all* sprites invisible by using STOP/RESTORE. Then you can use the SPRITE statement to bring them back to life, by entering something like:

```
SPRITE 4,1
```

Observe that sprite four is visible again. You can change its color by entering:

```
SPRITE 4,1,X
```

where X is a number from 1 to 16, corresponding to the color you want your sprite to be. The four, of course, specifies the sprite we are controlling, while the one and zero turn it on or off. You should study page 294 of your system guide, and experiment with the x-exp and y-exp parameters of the SPRITE command. At this point, the priority and mode parameters may not seem to do much, but you can rest assured that they are useful.

## Designing and Creating Sprites

To design your own sprite, you must decide how you want it to look, then make the appropriate entries into sprite memory. With the Commodore 64, this was not particularly easy, and required numerous pokes and/or the use of a separate sprite editor program. With the 128, it's much simpler, and you have three options:

1. Use SPRDEF, the built-in sprite editor program.
2. Use the 128's high-resolution graphics commands to create a design on the screen, then use the SSHAPE and SPRSAV commands to turn it into a sprite.
3. Use the tried and true methods that worked with the 64.

SPRDEF is described in detail in your system guide, on pages 116-119 and page 293. If you read that material closely, and experiment on your own, you'll soon know how to use SPRDEF. While you are experimenting, keep in mind that when SPRDEF talks about "saving" sprites, it means saving them to the sprite memory area, not to the disk. If you're tempted to experiment with multicolor sprites, you should first read our material on that subject, appearing later in this article.

The system guide's pages 109-116 give examples of using SSHAPE and SPRSAV, both of which are also ex-

**Table 2. Sprite-Related Keywords**

| | |
|---|---|
| BUMP | Returns sprite collision information |
| COLLISION | Defines handling for sprite collision interrupt |
| MOVSPR | Moves or locates sprites, using one of four methods |
| RSPCOLOR | Returns last sprite multicolor value |
| RSPPOS | Returns speed and position of sprite |
| RSPRITE | Returns sprite attributes |
| SPRCOLOR | Sets Multicolors 1 and 2 for all sprites |
| SPRDEF | Creates sprites on the screen, using a built-in editor |
| SPRITE | Controls all sprite attributes—color, size, priority, color mode |
| SPRSAV | With SSHAPE, puts a high-resolution graphics creation into a sprite |
| SSHAPE | Saves a high-resolution graphics creation, so SPRSAV can put it into a sprite |

plained in section 17. If you read the manual and type in the sample program, you'll get a feel for their use, plus a beginning look at MOVSPR. As you work on this program, you may make a typing error that causes it to hang up in graphics mode. If that happens, hitting STOP/RESTORE will return you immediately to text mode. You could also use a TRAP statement to put you there automatically. There's a minor bug in the sample program, since when it ends, the sprites keep moving, even after you hit STOP/RESTORE. That situation can confuse other sprite programs. You can improve the program by adding these lines:

```
 6 COLOR 1,8 : TRAP 99
96 MOVSPR 1,0#0 : SPRITE 1,0
97 MOVSPR 2,0#0 : SPRITE 2,0
```

The 64's method of sprite creation can best be understood by studying the *Commodore 64 Programmer's Reference Guide*, plus the numerous articles that have appeared in magazines. It is useful to know the method, but you can enjoy your sprites on the 128 without it.

We're going to assume that, with your excellent reading skills and powerful creative instincts, you'll quickly teach yourself the art of making sprites on the Commodore 128. Now we can concentrate on tools.

Our first tool is the SPRITESEER program, which displays stationary sprites on the screen and lets you manipulate their attributes. It puts all eight sprites at the bottom of the screen, symmetrically aligned with the screen positions of printed characters. SPRITESEER gives each sprite the color corresponding to its number; if you want them all to be colored the same, change the SPRITE statement's third argument to the number of that color. To expand the sprites in the X and Y directions, set E = 1. To make them multicolor, make M = 1. When you run the program, it lists the important attribute-controlling line at the top of the screen, and prints the word RUN immediately below it. That way, you can easily change the line and run the program again.

The second tool is NUMBERS.BAS, which makes and BSAVEs some interesting sprites. BSAVEd as NUMBERS .SPR, they are similar to SQUARES .SPR, but each is labeled with its own number, making it easy to identify on the screen. When you begin moving sprites around, you can use these sprites for testing purposes, and they'll be worth their weight in gold. Just BLOAD them in place of your regular sprites.

Your third tool is SPRITESAVER, which automates the BSAVE procedure for sprites. It lets you BSAVE all the sprites, one sprite, or a selected group. SPRITESAVER will be particularly useful in combining sprites from several BSAVEd files. Load the files of interest, use SPRITESAVER to BSAVE the individual sprites you want, then clear memory and BLOAD them individually until you have your desired selection of sprites. (To change the number of a sprite, use SPRDEF's "C"

**SPRITESEER**

```
110 E=0:M=1:SPRCOLOR 11,16
120 FOR K=1 TO 8:SPRITE K,1,K,1,E,E,M
    :MOVSPR K,72*K+288*(K>4)-20,
    133-(56*(K>4)):NEXT K
130 PRINT CHR$(147);:LIST-110
    :PRINT CHR$(145)"RUN"                END
```

**NUMBERS.BAS**

```
110 GRAPHIC 2,1 :REM TO GRAPHIC MODE
120 BOX 1,5,6,18,16 :REM DRAW INNER
    BOX
130 BOX 1,0,1,23,21 :REM DRAW OUTER
    BOX
140 PAINT 1,1,2 :REM FILL IN BETWEEN
150 FOR S=1 TO 8
160 S$=RIGHT$(STR$(S),1) :REM NUMBER
170 CHAR 1,1,1,S$ :REM PRINT THE
    NUMBER
180 SSHAPE A$,0,1,23,21
    :REM SHAPE TO A$
190 SPRSAV A$,S :REM A$ TO SPRITE #S
200 NEXT
210 GRAPHIC 0 :REM BACK TO TEXT MODE
220 REM SAVE ALL SPRITES TO DISK
230 BSAVE"NUMBERS.SPR",B0,
    P3584 TO P4096
240 PRINT DS$ :REM ERROR OR OK       END
```

**SPRITESAVER**

```
110 PRINT"[CLEAR,DOWN14,SPACE5]
    THIS SAVES A RANGE OF SPRITES[DOWN]"
120 INPUT"FIRST SPRITE TO SAVE (1-8)";F
130 PRINT
140 INPUT" LAST SPRITE TO SAVE (1-8)";L
150 PRINT TAB(17)"[DOWN2,CMDR T16,UP2]"
160 INPUT"FILENAME TO USE";F$
170 IF LEN(F$)>16 THEN 150
180 FL=3584+64*(F-1):LL=3584+64*L
190 Q$=CHR$(34):PRINT"[HOME,DOWN3]
    BSAVE";Q$F$Q$;",B0,P";FL;"TOP";LL
200 PRINT"[DOWN3]PRINTDS$[HOME]"
210 POKE 842,13:POKE 843,13:POKE 208,2
    :END                                 END
```

**HBARMULTI.BAS**

```
110 FOR K=3584 TO 4032 STEP 64
120 FOR L=00 TO 20:POKE K+L,085:NEXT
130 FOR L=21 TO 41:POKE K+L,170:NEXT
140 FOR L=42 TO 62:POKE K+L,255:NEXT
150 NEXT K
160 REM SAVE ALL SPRITES TO DISK
170 BSAVE"HBARMULTI.SPR",B0,
    P3584 TO P4096
180 PRINT DS$ :REM ERROR OR OK       END
```

**VBARMULTI.BAS**

```
110 FOR K=3584 TO 4032 STEP 64
120 FOR L=0 TO 63 STEP 3
130 POKE K+L+0,85
140 POKE K+L+1,170
150 POKE K+L+2,255
160 NEXT L:NEXT K
170 REM SAVE ALL SPRITES TO DISK
180 BSAVE"VBARMULTI.SPR",B0,
    P3584 TO P4096
190 PRINT DS$ :REM ERROR OR OK       END
```

command to copy it to the desired position.) When everything is as you want it, use SPRITESAVER to BSAVE all sprites.

### Multicolor Sprites

Some of our tools apply to multicolor sprites, which deserve some explanation. The final argument in the SPRITE statement can put the sprite into multicolor mode. Although any sprite can be displayed in this mode, only those especially created as multicolor sprites are likely to be presentable. A multicolor sprite can contain up to three different colors. The first of these is set by the SPRITE statement in the usual way. The other two, referred to as Multicolor 1 and Multicolor 2, are set by the SPRCOLOR statement. (Their default values are white and red, respectively.)

When using SPRDEF, pressing the "M" key initiates multicolor mode. The design cursor becomes two pixels wide, number keys one through four become active in assigning colors, and each keypress fills two pixels. Here are the actions of the number keys:

The 1 key selects the background color (blank)
The 2 key selects Multicolor 1
The 3 key selects the color from the SPRITE statement
The 4 key selects Multicolor 2

The system guide has a misprint about these colors. If you follow our table, you won't go wrong.

Now to our multicolor tools. HBARMULTI.BAS creates and saves sprites which, in multicolor mode, appear as flags with horizontal bars in three colors—sprite color, Multicolor 1, and Multicolor 2. VBARMULTI.BAS produces similar sprites, but with vertical bars. In single-color mode, these sprites have quite a different appearance. If you delve into the literature on sprites, you will come to understand the reason.

Well, that's the end of our dissertation on sprites. If you've used them on the Commodore 64, you can see how far they've come. If you're a new hand at computing, we hope our discussions have been helpful. Either way, we hope you enjoy your new tools. To help you get started with Commodore 128 sprites, we've provided Table 2, a listing of every sprite-related keyword. C


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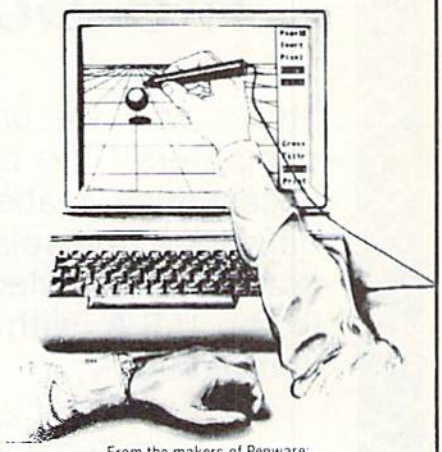

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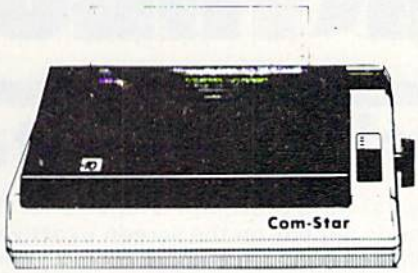


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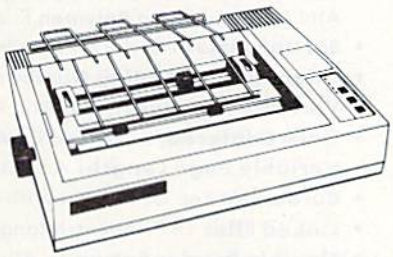

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**Lifetime warranty***
**165-185 CPS**
***High Speed & Letter Quality***

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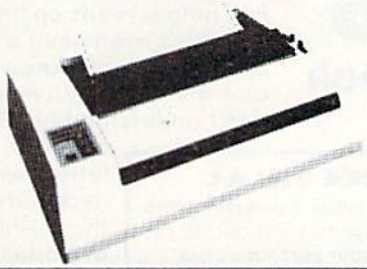
**10" Comstar 2000** — The ultimate printer has arrived! This Bi-directional Tractor/Friction Printer gives you all the features of the Comstar 160 plus higher speed (165-185 cps), 256 downloadable characters, proportional setting, external dark printing mode and a *lifetime printhead warranty. **PLUS** ...



With the flip of a switch you can go into the letter quality mode which makes all your printing look like it came off a typewriter. Turn in term papers, do articles or just print programs. Have the best of letter quality and speed in one package. Fantastic printer (Centronics parallel interface.)
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*Connecting cable $9.95

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| Bulk Pac | 100 Qty. | 69¢ ea. | Total Price | $69.00 |
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***• Each disk certified*** ***• Free replacement lifetime warranty*** ***• Automatic dust remover***

For those who want cadillac quality we have the Loran Floppy Disk. Used by professionals because they can rely on Loran Disks to store important data and programs without fear of loss! Each Loran disk is 100% certified (an exclusive process) plus each disk carries an exclusive FREE REPLACEMENT LIFETIME WARRANTY. With Loran disks you can have the peace of mind without the frustration of program loss after hours spent in program development.

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Just like a record needle, disk drive heads must travel hundreds of miles over disk surfaces. Unlike other floppy disks the Loran smooth surface finish saves disk drive head wear during the life of the disk. (A rough surface will grind your disk drive head like sandpaper). The lint free automatic CLEANING LINER makes sure the disk-killers (dust & dirt) are being constantly cleaned while the disk is being operated. PLUS the Loran Disk has the highest probability rate of any other disk in the industry for storing and retaining data without loss for the life of the disk.

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The Doctor disk drive cleaner can be used with single or double sided 5¼" disk drives. The Doctor is an easy to use fast method of maintaining efficient floppy diskette drive operation. The Doctor cleaner comes with 2 disks and is packed in a protective plastic folder to prevent contamination. List $29.95. **Sale $19.95.** ** Coupon $14.95.*

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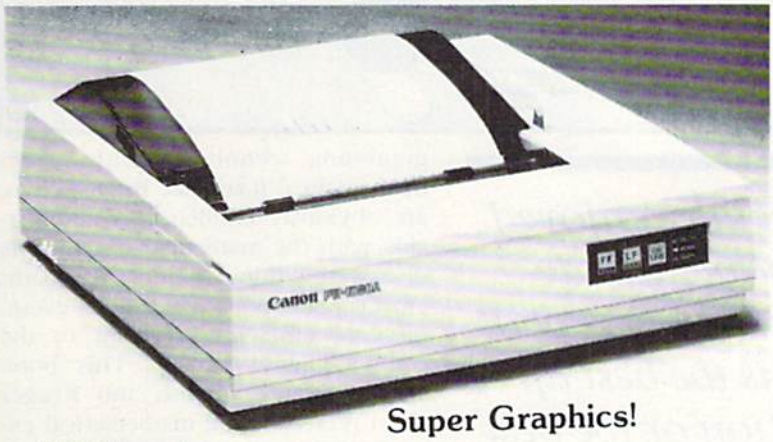

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**Printing Speed**
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27 CPS at NLQ character printing

**Printing Direction**
Text Mode — Bi-directional
Graphic Mode — Unidirectional

**Print Head Life**
100 million characters

**Printing Characters**
Standard 11 x 9 dot matrix
NLQ 23 x 18 dot matrix
Character size: 2 x 2.42 mm (standard)
Character set: Full ASCII character set (96), 32 special European characters

### (Apple - Atari - Etc.)

**Down Loading**
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**Print Buffer**
2K-byte utility buffer

**Image Printing**
Image Data: Vertical 8, 9 and/or 16 dot
Resolution: Horizontal 60 dots/inch
Horizontal 120 dots/inch (double density)
Horizontal 240 dots/inch (quadruple density)

**Interface**
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**Paper**
Plain paper, Roll paper, Single sheet, Fanfold, Multipart paper: max. 3 sheets (original plus 2)

**Ink Ribbon Cartridge**
Ribbon Life: 3 million characters/cartridge

**Maximum Number of Characters**

| | | |
|---|---|---|
| Standard: | 10 cpi | 80 cpl |
| Enlarged: | 5 cpi | 40 cpl |
| Condensed: | 17.1 cpi | 136 cpl |
| Condensed enlarged: | 8.5 cpi | 68 cpl |
| Elite: | 12 cpi | 96 cpl |
| Elite enlarged: | 6 cpi | 48 cpl |
| NLQ pica: | 10 cpi | 80 cpl |
| NLQ pica enlarged: | 5 cpi | 40 cpl |

**Physical Dimensions**
Size: 15¾" x 12 5/8" x 4 3/8" (10")
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REVIEWED BY AL WILLEN

# At Home with BASIC: Programming the Commodore 64

**Authors:** Henry Mullish and Dov Kruger
**Publisher:** Simon & Schuster
1230 Avenue of the Americas
New York, NY 10020
**Price:** $12.95

Upon reading *At Home with BASIC*, I quickly realized that I was holding something valuable—a quality BASIC tutorial. What makes *At Home with BASIC* a superior product is that rare symbiotic relationship between authors Mullish and Kruger, and the fine editorial staff at Simon & Schuster. Quality is evident everywhere: a crisp graphic design; well thought-out, structured writing; literary precision and distinction; and insightfulness into new computer applications.

One of the first things you will notice about *At Home with BASIC* is its attention to detail. If a book could ever be ergonomically designed, this would be the one to serve as a blueprint. Graphically, the book is stunning, even if it is in black and white. It also lies flat for easy "hands on" usage.

*At Home with BASIC* is clear and comprehensive. Every chapter ends with review questions—structured questions followed immediately by detailed answers. In fact, I have found this section integral to the success of *At Home with BASIC*, because the answers summarize important chapter points and topics. Each chapter also has a "Hands-On Practice Section," with interesting programming challenges directly based on lessons learned in that specific chapter. A "Try Your Hand at These" section aids in the programmer's understanding of important concepts.

*I especially enjoyed the chapter on debugging, since what good is the best application or the best algorithm if your program won't run?*

*At Home with BASIC* is important because it reveals little-known programming secrets which are often uncovered by the Commodore 64 programmer only after months of painful experimentation. These secrets vary in their value to apprentice programmers, depending upon their prior experience. Thus, some tricks that may seem trite to some, will no doubt be revolutionary to others.

Mullish and Kruger have successfully shown new programmers that a number, whether constant or variable, can be expressed graphically (displayed), as well as processed internally in order to extrapolate a new generation of numbers. In other words, the original number can be stored, displayed, or changed. This concept is developed further when Mullish and Kruger discuss the LET as an assignment (i.e., LET X = X+ 1) rather than that of an algebraic expression/equation (i.e., X<>X+1).

The authors often illustrate programming techniques with actual mathematical formulas. Because they are obviously familiar and comfortable with the mathematical concepts discussed within this book, the mathematical situations they use as examples are eminently relevant to the computer environment. This book works because Mullish and Kruger don't pretend to be mathematical experts, they *are* mathematical experts. They use computers to solve problems which are important to them, ones they must deal with daily. To Mullish and Kruger, BASIC can be useful as a mathematical tool, a viable substitute for FORTRAN.

This book is intense—more of a freshman college text than the typical "learn-BASIC-in-40-minutes" manual now available. I would not recommend this book to the absolute beginner or non-mathematical person. I would recommend *At Home with BASIC* to an intermediate student.

All examples are clearly illustrated and spotlight programming at its best. I especially enjoyed the chapter on debugging, since I feel that this is a subject that is sorely missing from books of this nature. What good is the best application or the best algorithm if your program won't run? Mullish and Kruger show practical solutions to clear programming logjams fast.

Everything about *At Home with BASIC* is first-class: good design, excellent writing, and clear programming examples. Best of all, you get this masterpiece at a price that anyone can afford. I recommend *At Home with BASIC* without hesitation. C

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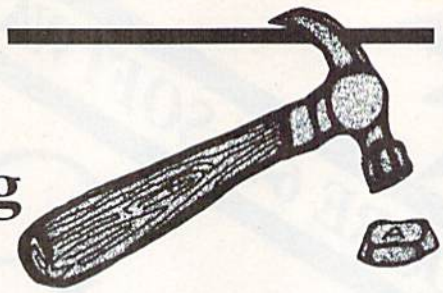
REVIEWED BY AL WILLEN

# Commodore 64 Troubleshooting and Repair Guide

**Author:** Robert C. Brenner
**Publisher:** Howard W. Sams
4300 West 62nd St.
Indianapolis, IN 46268
**Price:** $18.95



*This book will not magically transform you into a repair wizard, but it will give you a substantial understanding of the Commodore 64's inner workings and what steps to take if those workings should run afoul.*

A few months ago, I had planned to write a book concerning the inspection and repair of the Commodore 64 and its peripherals. I'm glad I didn't because author Robert Brenner beat me to the punch with the masterful manual *Commodore 64 Troubleshooting & Repair Guide*.

What underscores the success of this book is Brenner's apparent love of the Commodore 64 and his positive attitude towards his readers. This book is easy to understand, with a conversational tone that makes it a joy to use.

The *Commodore 64 Troubleshooting & Repair Guide* is both a tutorial in basic computer design, preventive maintenance and repair, plus a hands-on guide that helps users quickly spot and fix problems inexpensively. Especially unique is that this book can be successfully used by both beginners and experts alike. There's something in this manual that will appeal to just about everyone.

For example, novices will appreciate someone actually explaining the raw mechanics behind computing power in laymen's terms (how computers work in the first place). They'll see the fundamental parts of the 64 and be shown how these various parts work as a team. Expert readers will appreciate the extremely detailed circuit schematics and step-by-step descriptions on how to spot and easily replace defective or failing components.

Since a major part of successful repair ultimately depends on proper and accurate component identification, Brenner has devoted a large segment of the early stages of his book to ID markings and values for virtually all of the various types of microchips, capacitors, resistors, inductors, diodes, and transistors used within the 64. More than just an identification guide, the *Commodore 64 Troubleshooting & Repair Guide* points out the role of these various parts and how they relate to each other.

The book then discusses typical component failures: how the 64 fails, how the 1541 fails, and how video displays break down. We're shown the three methods a competent repairperson uses in order to trace a system malfunction: the "hardware approach" (through complex electronic test/trace tools); the "software approach" (via diagnostic software); and the "Commodore-easy approach" (13 deductive reasoning steps with accompanying do's and don'ts).

Although the "software approach" is not extensively covered in this book, an accurate overview is presented, as well as seven specific types of popular diagnostic software. Armed with this information, the end user will have little (if no) problem in selecting diagnostic software, if that repair approach is desired.

Brenner also notes special safety precautions that should be taken during troubleshooting and repair (for example, he cautions against fixing power-supply problems), as well as mentioning the components that require special handling.

Chapter four is the real workhorse of the entire book, and clearly shows Brenner's genius for clarity. Using the "Commodore-easy" method, he demonstrates the entire troubleshooting/repair procedure for a myriad of grouped failures, in an algorithmic fashion. In other words, he builds a logic flowchart, using thought paths, to analyze the problem. It becomes quickly evident that Robert Brenner thinks the way a good programmer thinks, via a top-down approach, to show that hardware troubleshooting and repair can be reduced to a "program" as well.

In all, over 30 common malfunctions are reviewed in detail, covering five major tasks: start-up problems, run problems, display problems, keyboard problems, and other I/O problems. Clearly this chapter alone is worth the cost of the book, if for nothing more than to help you assist a professional repairperson to quickly zero-in on the right course of repair action. (The reasoning: If you can narrow down the fault options, then the repair choice becomes clearer, saving the repairperson time and your money).

The book then outlines routine preventive maintenance that can be done with everyday tools. We're also shown how heat, cold, dust (and other foreign particles, including cigarette smoke), and noise (electrical) interference all contribute to system disintegration. Electromagnetic radiation, electrostatic discharge, and radio frequency interference are covered in amazing detail. I've never seen as much information compiled on thse subjects in any other non-dedicated book.

It also covers topics such as preventing powerline problems, effects of corrosion on the system, corrosion prevention, preventive maintenance for floppy disks and the 1541 disk drive, 15 steps toward longer disk life,

*Continued on Pg. 134*

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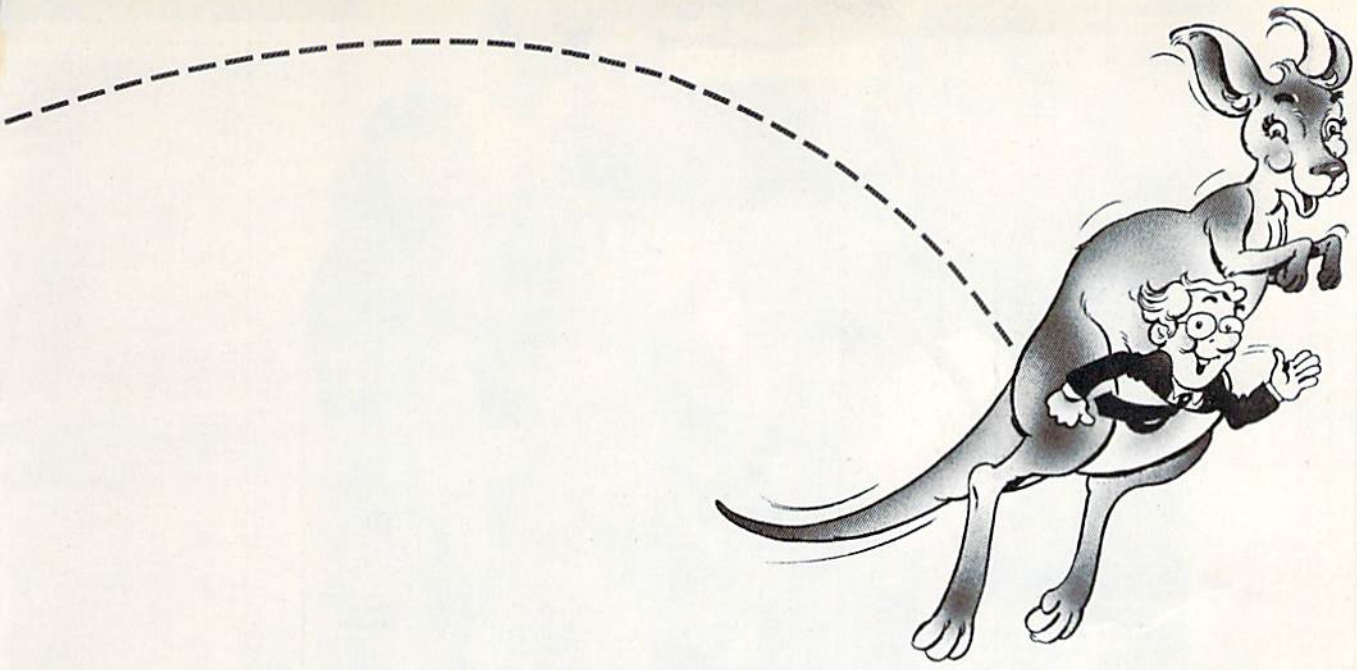

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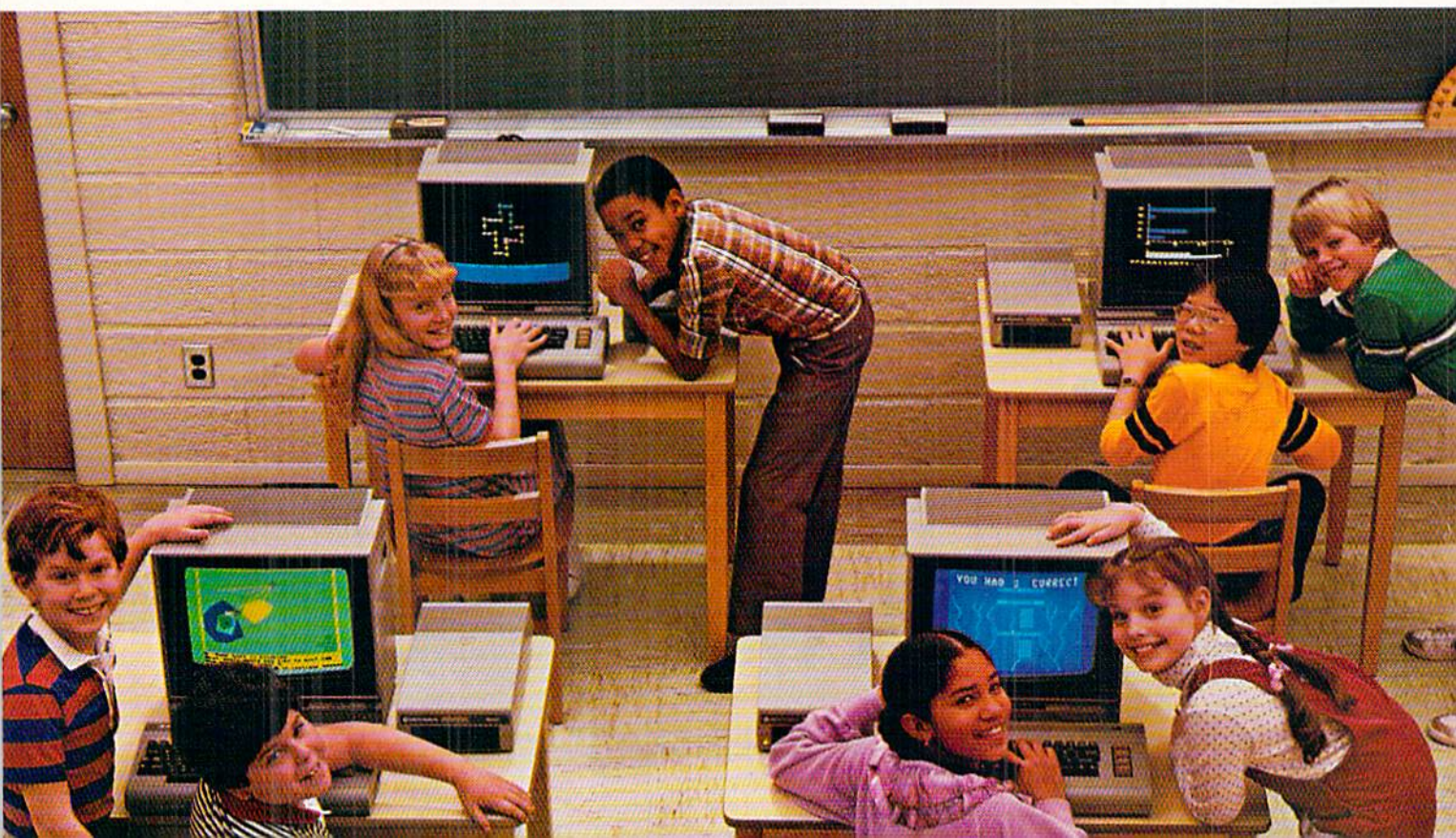

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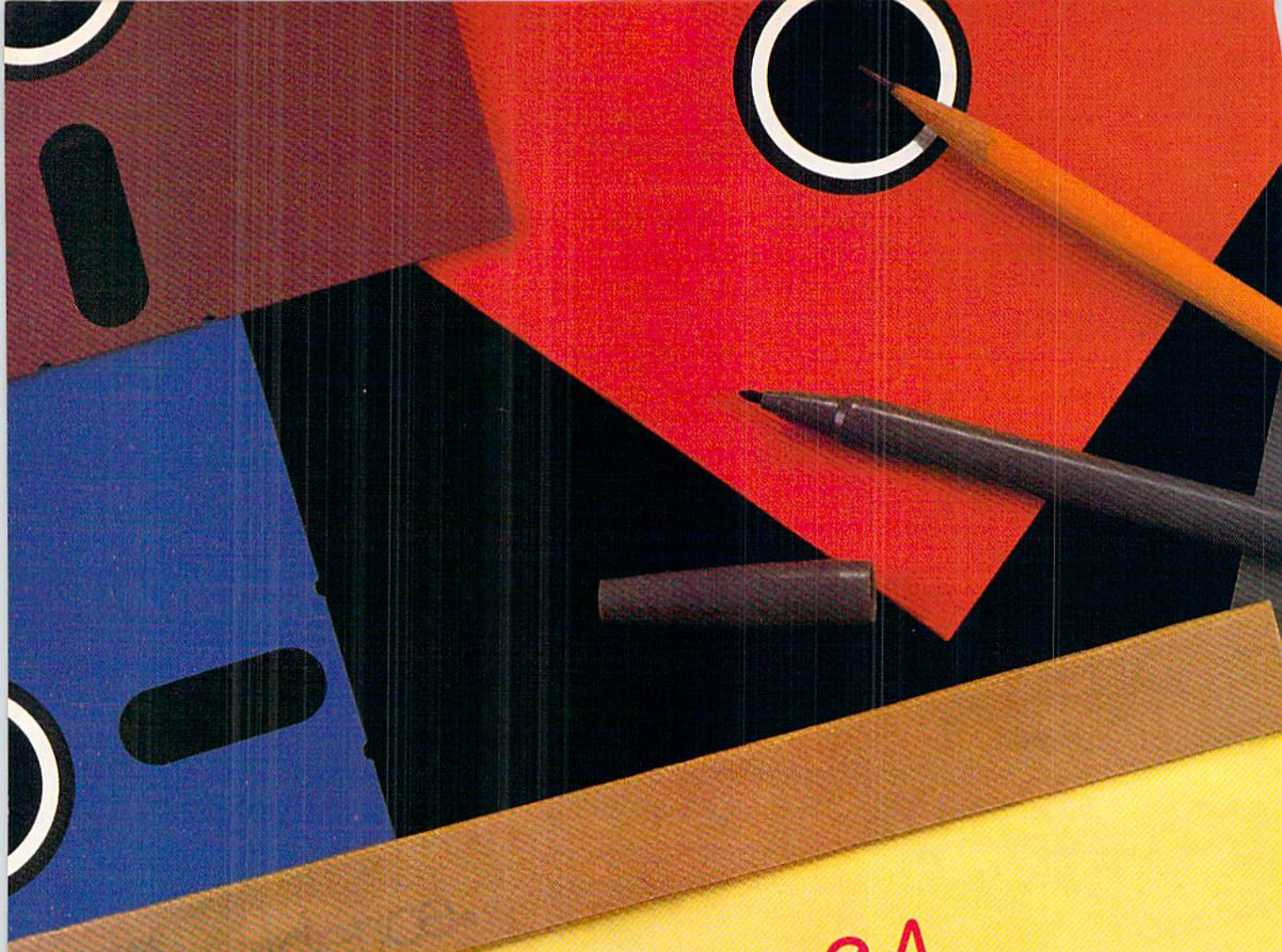


# Commodore 64 Word Processors

by Donald Maxwell

If you use a typewriter, then you need a word processor. That much is clear. Less clear is which word processor will be best for you. This buyer's guide takes care of that. It covers virtually all the word processors for the Commodore 64; it explains what they can and cannot do; and it helps you decide which one to buy.

# buyer's guide

First, here's a quick example of what word processors can do. Much as I appreciate them, the term "word processor" seems awkward, and I hate typing it. Fortunately, however, I can merely type "wp" whenever I mean "word processor" and then later, with the touch of a few keys, automatically change every "wp" to "word processor." It's wonderful—the best of two worlds. I can use the term without having to type it each time.

Word processors can also:

- Move words or sentences—even entire paragraphs—from one place in your written text to another with no fuss or muss.
- Change, add, or delete text anywhere you like. No erasures or messy places show up on the paper.
- Find a certain character, word, or phrase, and automatically change it to anything you specify.
- Center titles and other lines of your writing.
- Adjust margins with the touch of a few keys.
- Store your writing on a disk or a tape and retrieve it later on for reproducing or editing.
- Print "personalized" form letters by automatically inserting names, addresses, etc., wherever you specify.

For a complete list of word processor features, see Table 1.

## Choosing a Word Processor

In choosing a word processor, the most important consideration is to identify what type of person will be using it. Fortunately, this is easy because, as far as word processing is concerned, there are only three types of people—"writers," "cyberphobes," and "others."

By "writers" I mean people who want to use a word processor mainly for getting ideas onto paper—in the form of letters, school compositions, grocery lists, business correspondence, stories, even books or articles like this one. The last thing a writer needs is to be aware of the machine while trying to think of what to say. So for writers, a word processor should be "transparent," a practical tool they don't have to think about while concentrating on writing.

"Others" includes people such as professional typists and programmers. Although typists and programmers might seem to have very different needs, they tend to prefer similar kinds of word processors.

Professional typists generally do copy typing. That is, they don't *write*, they *type*, and so they use word processors very differently than "writers" do. Their aim is to produce typed copy fast and efficiently, and they often need to do unusual formatting. Therefore, they need every word processing function they can get, regardless of how much concentration it takes to use it.

Programmers, on the other hand, may not do much writing or typing at all, so they probably don't *need* all those special features. However, they appreciate the sophistication of the

software. They're in the "others" group because they generally just don't feel comfortable with the simpler, practical word processors.

And "cyberphobes"? They *dread* computers. Unfortunately, many people are cyberphobic—there may even be some in your own family. If they are going to use a word processor, it will have to be very simple and very user-friendly. If there's a chance that a cyberphobe might be using your computer for writing, then you should consider getting more than one word processor.

## Making the Choice—Types of Word Processors

Conveniently, there are also three main types of word processors.

- Those that do *everything*. These are often called "full- featured" or "powerful." Most recent word processors are of this type, and most of them will satisfy the needs of "others." Unfortunately, many of them also tend to be rather "opaque." This is because they require you to remember many commands. They are, therefore, hard to learn and have to be re-learned if not used almost constantly. And until you become really expert—which may take weeks—you have to think about them as you use them. Some manufacturers have tried to get around this problem by the extensive use of command menus. However, most of this type are so cluttered with various levels of menus that they are rather inefficient.
- Those that are practical for writers. Although not necessarily the easiest to learn or the most powerful, they are relatively "transparent." That is, they can be used without intruding on the writer's thoughts.
- Those that are very easy to learn and use. Most of these are severely limited in what they can do, but they are so "friendly" that they make converts of even the most confirmed cyberphobes. They are also good for young children, and because they don't have to be re-learned, for those who will use them only infrequently.

## Other Important Considerations

The evolution of word processors has been at least as rapid as that of personal computers. So far, however, the perfect word processor has not been created. But the Commodore 64 is such a popular computer that there are *dozens* of different word processors for it, each with its own strengths and weaknesses. So even after you determine which general *type* suits you best, you will probably have to make several compromises in deciding which *specific* word processor to purchase. Another problem is that once you become familiar with one of them, the others are likely to seem clumsy and confusing, even though they may seem just fine to someone else. With that in mind, here are some other things you will need to consider in choosing a word processor.

There are three main types of word processors: those that do everything, but are difficult to learn; those that are relatively "transparent" and don't intrude on the writer's thoughts; and those that are very easy to learn, but don't have many features.

## Display

The Commodore 64 produces a video display that is 40 columns wide. But most things you will want to type are going to end up wider—usually between 60 and 80 columns. This means that what you see on your 40-column screen will be arranged differently when it is printed out on paper.

Then how can you tell whether your piece of writing is arranged correctly without resorting to the printer? Happily, most modern word processors provide a way for you to check the format. There are several different approaches to this:

- The folded line. This displays your text so that any line which extends beyond the 40-column limit of your screen is continued on the next screen line. Folded lines work fine for proofreading, but not for checking the format.
- The 40-column scrolling "window." This treats your 40-column screen as if it were a window in front of your text. Using the cursor keys, you scroll the screen from side to side, which allows you to see the entire width of the text—but only 40 columns of it at a time. This is all right for checking format, but it makes proofreading difficult.
- The 80-column preview map. This shows you a *diagram* of your text, with one tiny dot representing each letter. You can't read anything, but you can see the general shape of the text well enough to check on the format. You do your proofreading in the edit mode.
- The true 80-column preview output. This shows you your text in half-width letters, so that as many as 80 can appear on each line of the screen. You can't type in this mode, but you can check the format easily. And with a monitor or *very* sharp television picture, you can also proofread. To make any changes in the text, you first have to return to the edit mode.
- The true 80-column edit. This enables you to see up to 80 columns of text *while you type*. What you see on the screen can be formatted exactly the way it will appear on paper. Furthermore, you can see twice as much text at any one time. The 80-column display is harder to read, however, especially on a color television, so to use an 80-column word processor comfortably you will probably need a monitor. So far, only a very few word processors can provide true 80-column editing.

- The 80-column adaptor. This produces a true 80-column display, but without the need for the word processor itself to produce the high-resolution 80-column characters. Unfortunately, 80-column adaptors are an extra expense, and many word processors won't work with them.

## Word Wrap vs. Word Stream

One of the controversies in word processor design has been over whether a word at the right side of the screen will be divided into two parts if it is too long to fit on the line, or whether the whole word will be "wrapped"—moved completely—to the next line.

From my own point of view, there are two ways of thinking about this. On the one hand, broken words are somewhat harder to read than wrapped words (although most persons quickly get used to it). On the other hand, most word processors that do word wrapping don't provide any way for you to see how many spaces there are at the end of each screen line. When the text is printed, therefore, you may end up with extra spaces between words. A few recently developed word processors solve this problem by providing space-markers or end-of-screen line markers.

## Control

One of the most important considerations is whether or not you can break off writing and edit some other line of text without having to change modes. This is probably somewhat less important to a copy typist. But it's extremely important to a writer, because—contrary to what old-fashioned English teachers might like to think—almost no one writes straight through from beginning to end. Most real writing is done in a recursive fashion, with lots of skipping backwards and forwards to make changes. This ability to skip around at will is called "full-screen editing," and in word processing it means that you can go anywhere in the entire text.

Beyond the write/edit matter, there are three main approaches to telling a word processor what to do.

- *Mnemonic* commands. This approach generally uses the CTRL key to turn other keys into

## Table 1. Word Processor Features

### Standard Features Every Word Processor Should Have

Writing and Editing
- write and edit in the same mode
- change text
- delete text
- insert text
- copy text
- move text
- find a specific portion of the text
- find and replace text with some other text
- set margins
- set length of page
- center text automatically
- include text enhancement commands (underline, italics, boldface, superscript, subscript, etc.)
- preview the format before printing

Printing
- link files
- mail merge
- send special printer codes
- begin printing at a specific page
- automatic page numbering

Filing
- display disk directory without disturbing the text
- store text
- retrieve text

Printing
- headers
- footers

Filing
- load from the disk directory
- save part of a text
- full range of disk commands

### Fancy Stuff Found in Only a Few Word Processors

Writing and Editing
- delete key buffer
- alphabetize lists
- calculate numbers in columns or rows
- move columns of numbers or text
- align numbers
- transpose characters
- non-printing comments
- count words
- space markers/end-of-screen line markers
- place markers
- extra memory section (for scratch work, temporary storage, etc.)
- spelling checker built in
- 80-column typing
- 80-column preview
- special print styles visible on screen (edit/preview)
- change screen colors
- key click sound
- other sounds

Printing
- print from cursor location
- alternate character sets
- double-column printing
- interrupt printing or previewing for correction, then resume at top of same page

Filing
- save part of a text
- change file type (sequential to program)
- ASCII output
- text appears on screen while loading
- works with tape datassette
- fast loading/saving (speeds up disk drive)

### Extra Features of Full-Featured Word Processors

Writing and Editing
- rapid delete (character/word/sentence/line/paragraph/block/all)
- delete to the right of cursor
- capital letters without shift
- automatic paragraph indentation
- left margin release (outdent, as in an outline)
- conditional page (prevents orphans and widows)
- conditional hyphen
- decimal tab
- boilerplating (common phrases)
- building-block variables
- right justify
- fill justify

special-function keys. In most word processors of this type, there is some mnemonic relationship between the key and the function. CTRL-E, for example, is often used as a mnemonic for "erase" and CTRL-S for "save." These examples seem clear enough; but what key would mean "search?" With CTRL-S already taken, several word processors use CTRL-G (G for "global search"). It takes a while to learn which keys produce which actions, but once you've learned them, this approach is fast and effective. A keyboard overlay—a cardboard or plastic sheet that fits on the keyboard—is sometimes used to help you remember the functions of the various keys. This is helpful, but oddly, very few word processors come with an overlay.

- *Spatial* arrangements of special-function keys. This is similar to the mnemonic approach, except that there is no attempt to make the key names relate to the function they produce. Instead, the whole row of number keys works with CTRL and the Commodore key. An overlay (supplied with these word processors) is taped to the keyboard, just above the row of special-function keys, so that identifying them is easy. This approach can provide up to 28 easily-selected functions (in addition to the eight regular function keys) when every key in the top row is used.
- *Menu* displays. This approach puts the functions on the screen, rather than on the keyboard. Generally, you make selections by moving the cursor to the name of the function you want and then pressing RETURN. From the user's point of view, there is a certain elegance to this method, since it keeps your attention on the screen, and it may be the easiest for beginners. However, most menu-driven word processors turn out to be rather cumbersome and slow, especially when a menu contains several layers of the sub-menus.

Many word processors provide "help" displays so that you don't have to dig into the manual. These are more helpful if they reside in the computer's memory, as the delay while a help file loads from the disk can be frustrating. (When you first use a word processor, it may seem to be going faster than you are. This sensation lasts only a short time, and then you are likely to find yourself waiting impatiently for it to do its job.)

Even the worst word processor will beat a conventional typewriter for most writing or typing jobs. But hands-on experience is needed if you want to find the one that is *exactly* right for you.

## Printer Connections

If you have one of the Commodore printers, you have nothing to worry about here. If not, then you will want to look for a word processor that talks a language your printer can understand. Another thing to consider is that some word processors require you to embed "printer codes" in your text, especially the codes for underlining, bold-face print, and the like. Some of the more recent word processors provide easier ways of achieving the same effect—special menus, for example—although embedding codes may be faster, once you get the hang of it. Some word processors provide special "printer driver" programs, one for each of the popular printers. Others permit you to make up your own file of embedded commands that you load at the beginning of each text. This approach may seem clumsy, but on the other hand, it's an easy way to make up customized printer drivers for different purposes.

## Disk or Tape

Another consideration when selecting a word processor for the Commodore 64 is whether you will be using it with a disk drive or a tape datassette. Here your choices are limited because nearly all of the word processors available require a disk drive. But two that I know of are in cartridges and can store text on either disk or tape. (These are also among the more interesting word processors.) A few others can be copied from disk to tape.

## Specific Features

There are so many different word processors and so many different features that I have listed them in two accompanying tables. Table 1 identifies the standard features possessed by virtually all word processors, the extra features in full-featured models, and the really fancy features that only a few word processors possess. Table 2 (on pages 118-121) lists specific word processors, shows whether they possess certain features beyond the standard ones, and identifies their notable strengths and weaknesses.

## Some Especially Interesting Word Processors

As you see in Table 2, there are many fine word processors for the Commodore 64. Before you peruse it, however, it might be a good idea to take a closer look at a few word processors that are especially interesting. By understanding their special attributes, you will be better able to interpret the chart and to settle on the right word processor for you.

**Paperclip**: Many people think this is the *non pareil* of Commodore word processors. More than full-featured, it does almost everything. Although you write in streaming text on a 40-column screen, you can switch easily between a 40- or 80-column preview display. Also, it's one of the few designed to work with an 80-column adaptor (although on-screen text formatting is not automatic). It alphabetizes lists in ascending or descending order, and it adds columns and rows of numbers. It moves columns both horizontally and vertically. It even displays incoming text on the screen as it retrieves a disk file. Editing is made especially easy because you can

*Continued on pg. 116*

# Word Processor Publishers

| Publisher | Product |
|---|---|
| **Abacus Software**<br>P.O. Box 7211<br>Grand Rapids, MI 49510 | Textomat-64 |
| **Batteries Included**<br>30 Mural Street<br>Richmond Hill, Ontario<br>L4B 1B5 Canada | HomePak<br>PaperClip |
| **Broderbund Software**<br>17 Paul Drive<br>San Rafael, CA 94903 | Bank Street Writer |
| **Cardco, Inc**<br>300 S. Topeka<br>Wichita, KS 67202 | Write Now! |
| **Circadian Software**<br>Box 1208<br>Melbourne, FL 32902 | CircaScript |
| **Commodore Business Machines**<br>1200 Wilson Drive<br>West Chester, PA 19380 | East Script<br>Magic Desk<br>Word Machine/Name Machine |
| **COMPUTE! Publications, Inc.**<br>P.O. Box 5406<br>Greensboro, NC 27403 | SpeedScript |
| **Creative Software**<br>960 Hamlin Court<br>Sunnyvale, CA 94089 | Creative Writer |
| **Datamost**<br>19821 Nordhoff Street<br>Northridge, CA 91324 | Kwik-Write! |
| **Datasoft**<br>19808 Nordhoff Place<br>Chatsworth, CA 91311 | Letter Wizard |
| **Design Enterprises of San Francisco**<br>P.O. Box 14695<br>San Francisco, CA 94114 | Word Worker |
| **Digital Solutions, Inc.**<br>P.O. Box 345, Sta A<br>Willowdale, Ontario<br>M2N 5S9 Canada | Paperback Writer |
| **Electronic Arts**<br>2755 Campus Drive<br>San Mateo, CA 94403 | Cut & Paste |

| Publisher | Product |
|---|---|
| **Human Engineered Software**<br>390 Swift Avenue, #14<br>San Francisco, CA 94080 | OmniWriter &<br>OmniSpell |
| **Input Systems, Inc.**<br>15600 Palmetto Lake Drive<br>Miami, FL 33157 | Typro |
| **Intelligent Software**<br>Box A<br>San Anselmo, CA 94960 | The Package |
| **Mirage Concepts, Inc.**<br>2519 W. Shaw No. 106<br>Fresno, CA 93711 | Word Processor-Professional |
| **MMG Micro Software**<br>P.O. Box 131<br>Marlboro, NJ 07746 | Word Commander 64 |
| **Muse Software**<br>347 N. Charles Street<br>Baltimore, MD 21201 | Super-Text |
| **Prentice-Hall**<br>P.O. Box 819<br>Englewood Cliffs, NJ 07632 | SkiWriter II |
| **Professional Software, Inc.**<br>51 Fremont Street<br>Needham, MA 02194 | Fleet System 2<br>WordPro 3 Plus/64 |
| **Pro-Line Software**<br>755 Queensway East, Unit 8<br>Mississauga, Ontario<br>L4Y 4C5 Canada | WordPro 64 |
| **Richvale Telecommunications**<br>200 W. Beaver Creek Road<br>Richmond Hill, Ontario<br>L4B 1B4 Canada | Script 64 |
| **Sierra**<br>P.O. Box 485<br>Coarsegold, CA 93614 | HomeWord |
| **Timeworks, Inc.**<br>444 Lake Cook Road<br>Deerfield, IL 60015 | Word Writer |
| **TriMicro**<br>14072 Stratton Way<br>Santa Ana, CA 92705 | The Write File<br>Your Home Office |

# Commodore Launches the Amiga

## *End of a Dream, Beginning of a Legend, Dawn of an Era . . .*

*We asked freelance writer/programmer Louis Wallace to cover the launch ceremonies for Commodore's much-anticipated Amiga personal computer because we know he's honest and tough. Keep that in mind as you read this.*

BY LOUIS R. WALLACE

On July 23, several hundred people—a Who's Who of computer and technology writers, editors, reporters, market analysts, software and hardware developers—gathered at New York's Lincoln Center to witness the most impressive introduction of a computer (perhaps any single piece of technology) anyone has ever seen. I am talking, of course, about the new Commodore Amiga personal computer.

I attended this event with mixed feelings. I had very high hopes for the Amiga, and I expected a very impressive machine. Anything less would have been a disappointment. However, even my high expectations did not prepare me for what I saw there. Based upon the demonstrations I observed, the Amiga is without doubt the most powerful, versatile and useful machine on the market today, and it is likely to be the industry leader for some time to come. To give you an idea of its capabilities, imagine taking all that is good about the Macintosh, combine it with the power of the IBM PC-AT, improve it, and then cut the price by 75%. Only then will you begin to approach the power and value of the Commodore Amiga.

There are three main markets in which computers are used. These are business, education and the home. Because of the Amiga's wide-ranging capabilities, it has a place in all of these markets. This became obvious throughout Commodore's presentation, as one central theme emerged. The Amiga is not just a technological "black box." It is a machine with capabilities that range from traditional computer functions to things as yet undreamed of. And Amiga does it all faster, better and cheaper than any other computer—past, present and foreseeable future.

What makes the Amiga so powerful? Part of the answer is its central microprocessor: the Motorola 68000. This is a 16/32-bit chip, which is able to directly address 16 megabytes of RAM. It also operates at a fast clock rate (7.8 MHz), which means it is able to process information very quickly. By comparison, the IBM PC runs at 4.7 MHz, the IBM AT at 6 MHz, and the Macintosh at 7.8 MHz. So you can see that it is even faster than the IBM AT, which until now has been considered the most powerful personal computer on the market.

But wait, didn't I say the Macintosh also runs at 7.8 MHz? Why then is the Amiga so much more powerful? The answer to that lies in the hardware built into the Amiga. Along with the 68000, the Amiga contains several unique chips that act as co-processors to the main 68000. There is one chip for sound and peripherals, another for graphics, and a third for animation. This means the main processor only gives the orders for these functions to the co-processors—and they carry out those orders, leaving the 68000 free for other tasks. Since the graphics and sound are hardware devices, they perform at speeds that are truly amazing. When the Macintosh uses graphics, the 68000 processor must do all the work, and it uses software, not hardware to do it, resulting in a much slower display.

### Graphics

But there are other reasons the Amiga's graphics are so superior to

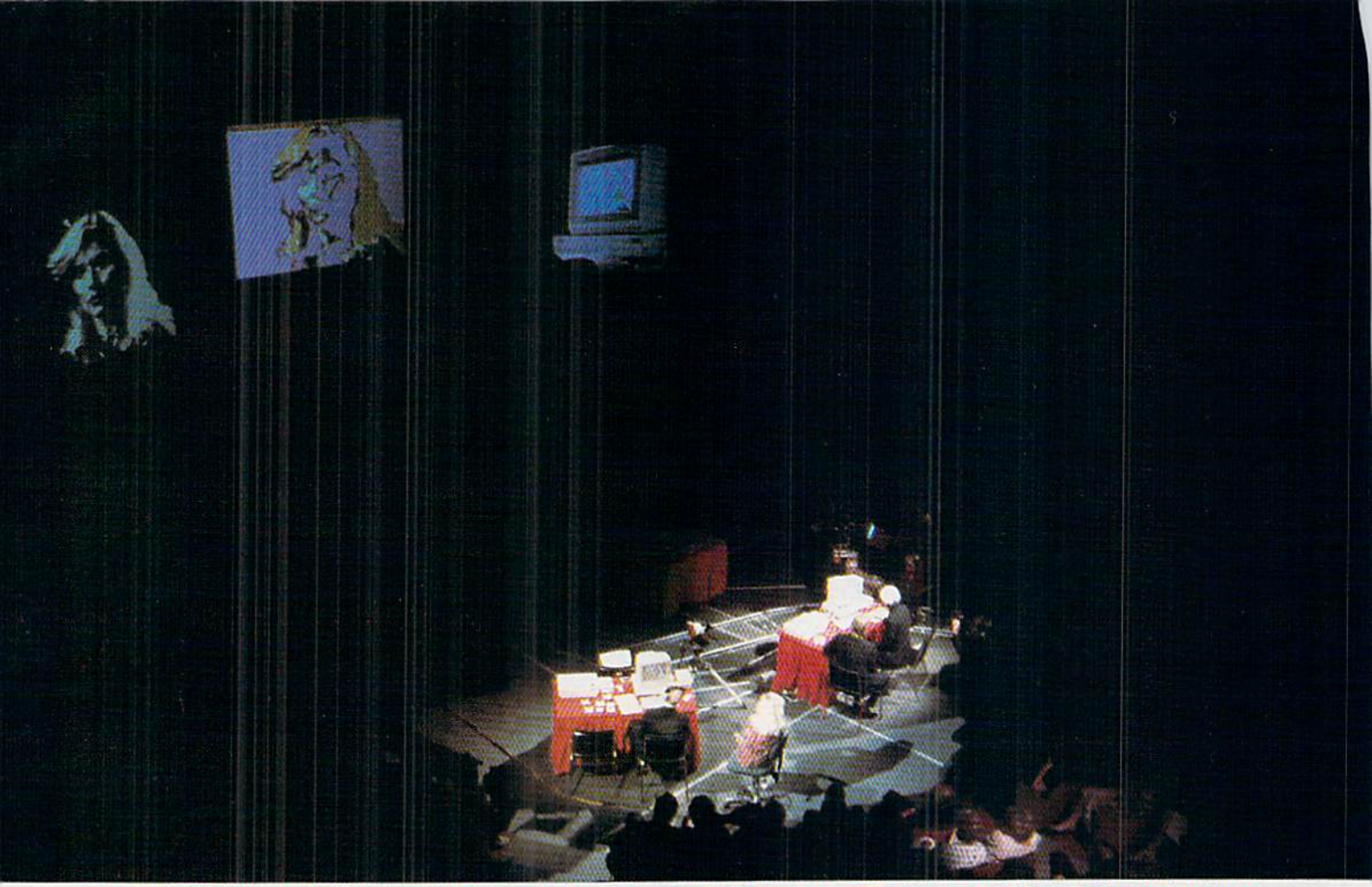
**Software and hardware developers, members of the press, and market analysts join Commodore and Commodore-Amiga dignitaries at Lincoln Center to launch the revolutionary Amiga computer.**

all the other PC's, and it's not just how fast it draws a line. There are new capabilities here that are unique. For instance, this machine has an animation potential that will rival dedicated video studios. You probably know what sprites are (movable object blocks), and the Amiga, of course, has sprites. You can have up to eight four-color sprites per horizontal scan line—and more if they are separated by at least one horizontal scan line. And you can combine pairs of sprites to give up to 16 colors per sprite. And your sprites can each be up to 16 pixels wide, and 1 to 200 pixels deep!

If sprites like that are not enough for your animation needs, how about the blitter? Basically, a blitter is a bit-mapped block transfer that is done by the hardware, not software, and performs at speeds that will simply amaze you. It allows for bit-mapped animation that until now was not practical.

And there is more! The Amiga has other animation techniques called GEL's (Graphic ELements), of which there are four main types. First is the "VSprites," or virtual sprites, which are related to regular sprites, but is really a data structure controlled by the animation ROM. A second GEL is called BOB, (Blitter OBject), a section of the bit map that acts like a sprite, but can have up to 32 colors. Third you have "Animcomps," which are composite objects made up of the fourth type, "animobj," or animation objects. Animcomps are several animobjs (objects) that can be made to move as one object. Frame changes can be defined for each animobj, each at a different rate if needed.

You get around in the Amiga by using either the keyboard or a two-button mouse. The mouse can be used to control an icon-like environment called Intuition. This is the main user interface to the Amiga, managing the graphics, windows, screens and the pull-down menus. Each screen has its complement of menus, and these



**Avant-garde artist Andy Warhol uses *Graphicraft* software from Island Graphics to create a portrait of rock artist Debbie Harry on the Amiga. (Image of Debbie Harry ©1985 Andy Warhol Productions. Reprinted with permission.)**

menus can have other pull-down menus inside. The mouse is used to select options, but the keyboard can also be used, if you wish.

You can also design the menus you use, and also the screens the menus are in. Each screen can have any graphics mode you desire, and Amiga engineers report that they have created up to 50 levels of overlapped windows. (More than any application I could think of.) These screens can be smoothly scrolled in any direction you wish, simply by clicking the mouse at the proper location. It doesn't matter what graphic mode you are in—low-res (320x200) or the highest resolution (640x400). When you wish to scroll a screen, it moves as smoothly as cold butter in a hot pan.

Intuition also includes Workbench, another icon-based control program. It's here you control files and programs, transfer data between programs, and design the screens you want to use and the menus they contain. Both Intuition and Workbench are very powerful systems that help the user control the Amiga. But if icons get in your way, you can bypass them and go directly to the operating system using typed-in commands.

During the demonstration, we were treated to examples of graphics that I would not have believed possible on a microcomputer. For instance, a large colored ball bounced around the screen and was rotating in three dimensions as it bounced. Its shadow acted like a real shadow, darkening what was beneath it but not hiding the background. As someone who has a strong interest in 3D graphics, I can tell you it was a real pleasure watching these real-time, flicker-free displays.

Since text is treated as another form of graphics, there is not a sharp division between text and graphics modes, as there is in many other computers. In fact, you can freely mix fonts, text sizes, bit-map displays and animation. And the text fonts can be in italic, bold, extended or underlined. The Amiga has a variable screen width, from 30 to 80 columns, depending on your needs at the time. It will even allow for proportional print. One obvious use will be in graphic design studios, where, combined with laser and color printers, the Amiga will soon become the workhorse of a new low-cost high-performance graphics work station.

To let you harness the Amiga's graphic power, several packages are available, each aimed at different types of graphics and different user needs. Island Graphics, of Sausalito, California, has several new programs. Island Graphics is considered an industry leader in computer graphics, and their work is used on graphics systems costing many times the price of the Amiga. They are top-notch graphics professionals. For the Amiga, they have *Graphicraft,* which is a painting/art package that takes advantage of the Amiga's incredible abilities. It was this program that was demonstrated at Lincoln Center by none other than Andy Warhol with rock star Debbie Harry as a model. The results were, like the model, beautiful.

Island Graphics also has *Presentationcraft,* a business presentation package that gives you 3D business graphics like bar and pie graphs (expanded 3D pie graphs), plus many special effects that will give your boss reason to sit back and take notice. Island has not forgotten the Amiga's fabulous animation abilities

either, as can be seen in *Moviecraft*. This uses advanced animation techniques to produce commercial quality animated graphics.

If you, like me, are a fan of Broderbund's *The Print Shop* graphics software, you will be pleased to know they have implemented it on the Amiga, and it is faster and sharper than ever. And A-Squared Systems of Oakland, California, is producing the Amiga Eye, a real-time video digitizer that can capture video images from any NTSC graphic device, such as a camera, tape, or laser disk. These images can be manipulated in a number of ways, and they will also be compatible with other Amiga paint packages for that last little touchup.

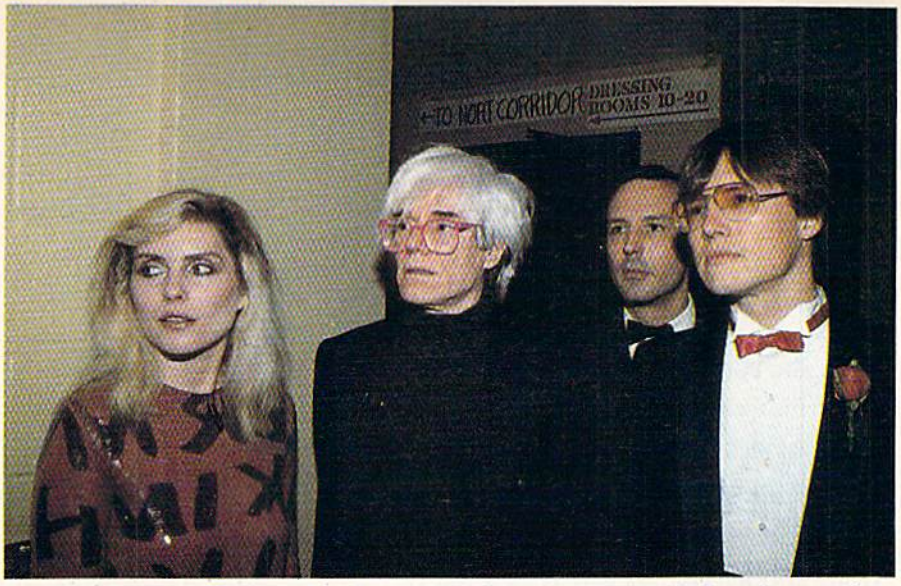
## Sound

Sound on the Amiga has opened a new world for the musically inclined user. First off, the Amiga has four independently controlled voices, which you can combine in pairs to give true separated stereo sound. And you are not limited to only four voices, because the Amiga can use virtual voices. These are separately programmed sound channels, each with a given priority. When you are using more than four voices, the system will use only those with the four highest priorities. At the speed this computer operates, you can create the effect of a multi-voice orchestra simply by programming it.

Of course, each voice is defined using four values called ADSR (Attack, Decay, Sustain and Release). Each voice also has a separate volume control with 64 levels, which offers far more versatility than even the SID chip in the Commodore 64 and 128 computers. I might add that I have heard a lot of really good music based on the SID chip, but never any as clear and clean as that produced on the Amiga. When you tell it to sound like a drum, banjo, violin or piano, it produces music so realistic, you will find yourself shaking your head in disbelief.

One of the accessories musicians will want to have, and one that is scheduled to be released at the same time as the Amiga, is a MIDI (Musical Instrument Digital Interface). This will allow you to interface and control up to 16 separate devices from the Amiga, such as synthesizers and digital drums (assuming the Amiga itself isn't enough for you).

*Continued on Pg. 130*




Rock performer Debbie Harry (l.) waits next to artist Andy Warhol for their cue to go on stage at the Amiga launch. Musician Roger Powell of Cherrry Lane Technologies is on the far right.

Thomas Rattigan (center), president of Commodore North America, chats with members of the press at the launch.

Mike Boom, representing Everyware, Inc., demonstrates that company's *Musicraft* software, which turns the Amiga into a professional four-voice synthesizer and sequencer.

# THE BEST OF 1985

In the course of this past year, in both this magazine and our sister publication, *Commodore Power/Play*, we reviewed several hundred products for the Commodore 64. To give you a ready reference—and help you plan Christmas gifts for your computer-using friends and relatives—here are all those products from our 1985 issues that received high recommendations from the people who reviewed them. There are, of course, many other excellent products on the market in addition to those featured here, but we think you'll enjoy taking a look at our reviewers' top choices.

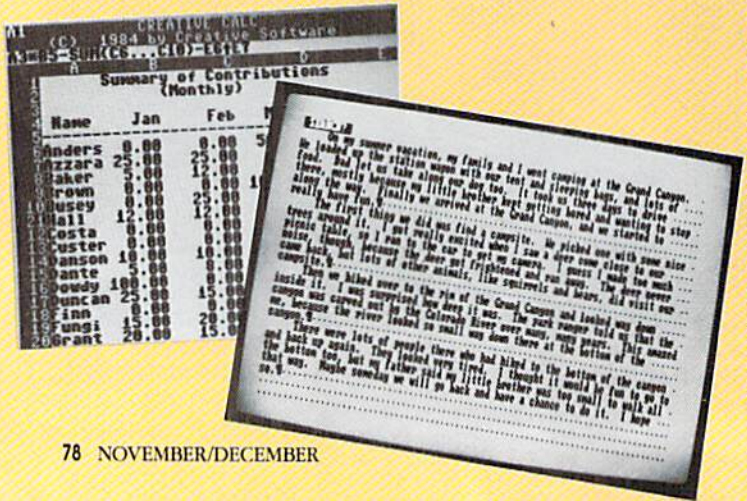
**COMPILED BY THE EDITORS**

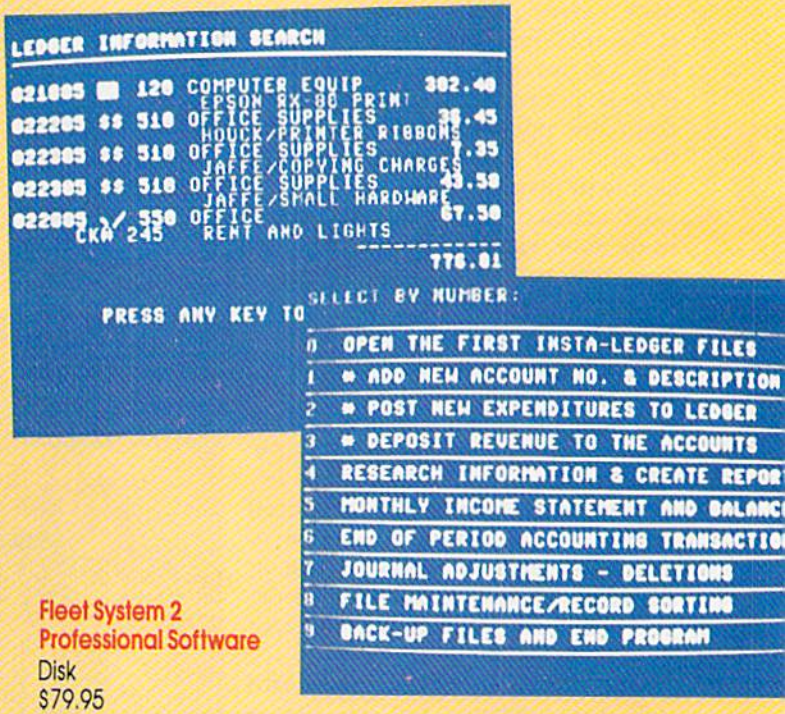
## Productivity Software

### Better Working Spreadsheet
**Spinnaker Software**
Disk
$49.95
See review this issue.

### CalcResult
**Handic Software**
Cartridge/Disk
Easy $49.95 Advanced $79.95
Full-featured spreadsheet for small business or home. Two versions: easy version on cartridge, advanced version on disk.

### Creative Writer/Filer/Calc
**Creative Software**
Disk
$99.95
Integrated word processor, database manager, and spreadsheet for small business or home. Sold as one package, although each can be used separately.




### Fleet System 2 Professional Software
Disk
$79.95
Composed of *Fleet Writer 3* word processor and *Fleet Speller* spelling checker in single package. Full-featured, easy to use. (See "Buyer's Guide to Word Processors," this issue.)

### Insta-Ledger
**Microsci**
Disk
$44.95
Simple accounting ledger system for home or light-duty business. Generates reports and graphs.

**PFS:File/PFS:Report**
**Software Publishing**
Disk
$79.95/$69.95
Integrated file program and report generator converted from IBM for home use and light-duty business. Very easy to use with excellent documentation. Sold separately. *PFS:File* can be used alone. *PFS:Report* requires use of *PFS:File*.

**Power Plan-64**
**Abacus Software**
Disk
$49.95
See review this issue.

**Vizastar**
**Solid State Software**
Cartridge and Disk
$119.95
Integrated spreadsheet, database manager and business graphics in single package for home or small business. Easy to use, excellent manual.

**WordPro 64**
**Pro-Line Software**
Disk
$50.00
Full-featured word processor for home or small business. Proportional spacing, alternating-page and double-column output. (See "Buyer's Guide to Word Processors," this issue.)

**Write Now/Spell Now/File Now/Calc Now/Mail Now**
**Cardco**
Disk (*Write Now* cartridge)
$39.95 each (*Write Now* $49.95)
Integrated word processor, spelling checker, file system, spreadsheet and mail list, respectively. Sold separately, so you can mix and match: Use them separately or together for home or small business. Modular approach excellent for beginners. (See "Buyer's Guide to Word Processors," this issue, for more on *Write Now*.)

# Home Applications/ Self-Enrichment

**Home Organizer Series**
**Batteries Included**
Disk
$19.95 each
Eight specialized database managers for home use, each sold separately. Series includes: *Audio/Video Catalog; Checkbook; Electronic Address Book; Stamps; Recipes; Home Inventory; Photographs, Slides & Home Movies;* and *Mail List.*

**Micro Cookbook**
**Commodore Business Machines**
Disk
$34.95
Specialized database manager that lets you organize and search for recipes according to keywords, modify recipes, and put together shopping lists.

**Micro Astrologer**
**Commodore Business Machines**
Disk
$19.95
Determines your natal chart and provides daily horoscopes. Allows you to store and print out information. Very thorough and easy to use.

**The Newsroom**
**Springboard**
Disk
$49.95
Create a realistic newspaper, generated from a library of more than 600 pieces of art and layout options.

**Phone Boss**
**SoftPeople**
Disk
Price not available.
Phone directory for home use. Very easy to use.

**The Print Shop**
**Broderbund Software**
Disk
$44.95
Versatile graphics program for creating greeting cards, banners, letterheads, and signs and printing them out. Includes colored paper and envelopes. Two additional disks available, containing more options.

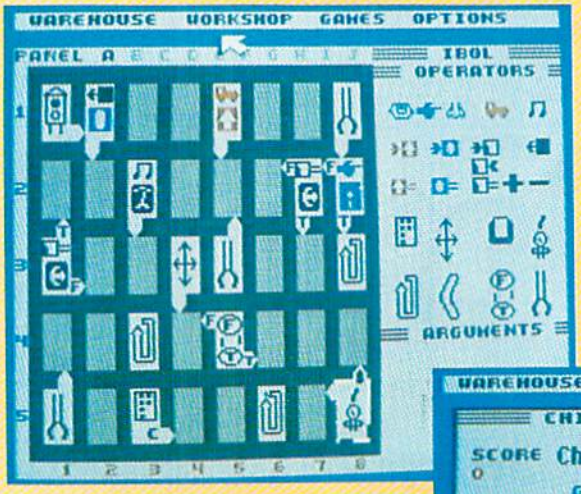
**Speed Reader II**
**Davidson and Associates**
Disk
$69.95
Designed to improve reading skills for high school students through adult. Approved by National Education Association.

**Your Personal Net Worth**
**Scarborough Systems**
Disk
$79.95
Personal finance package. Generates balance sheet showing assets and liabilities. Includes Sylvia Porter's *Money Book for the 80's.*

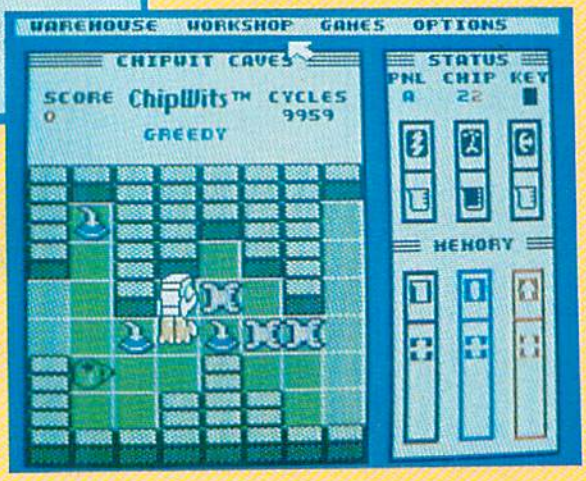
# Children/Educational

**Build a Book about You**
**Scarborough Systems**
$39.95
Publish a personalized storybook. Hardcover bindings, end sheets, title page, and illustrated paper for two stories. More binding materials can be purchased. For children ages 2 to 12.

**Cell Defense**
**Human Engineered Software**
Disk
$14.95
Defend your body against attack by virus. Unique three-window game screen. Recommended for children ages ten and older.




**Chipwits**
**Epyx**
Disk
Price not available.
Learn the basics of computer programming with the help of 16 little robots. Educational and entertaining. Geared toward the beginning programmer.




**Donald Duck's Playground**
**Sierra**
Disk
$24.95
Designed to teach children ages 7 to 11 how to count cash, make change, pay for purchases, and keep track of assets. Excellent graphics.

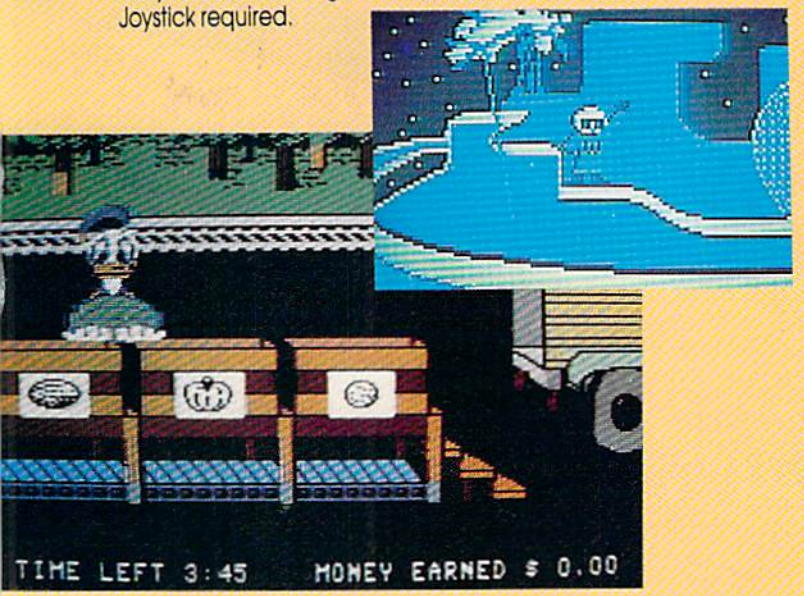
**Dream House**
**CBS Software**
Disk
$39.95
Design a home and bring it to life with movement and sound effects. For the young and young-at-heart.

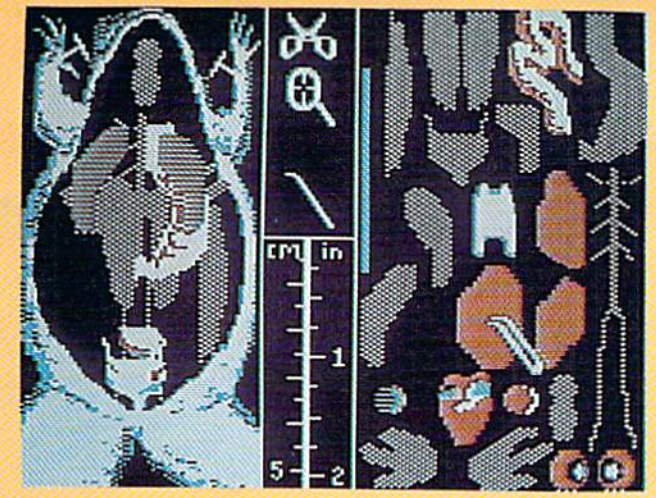
**Dungeon of the Algebra Dragons**
**Timeworks**
Disk/Tape
$24.95
Solve algebraic equations. Combines lively graphics, music and animation with dragons, poisonous spiders, bottomless pits, and ghosts. For children ages 8 to 13.

**Forecast!**
**CBS Software**
Disk
$49.95
Tracks the weather. Temperature and precipitation averages and extremes for the last ten years are included. Manual teaches everything from barometric pressure to importance of wet-bulb thermometer readings. High school level.

**Leaps and Bounds**
**Muse**
Disk
$39.95
Teaches reading readiness skills, number and counting skills, and appreciation of art and music. Ages 4 to 8.

**Movie Musical Madness**
**CBS Software**
Disk
$12.95
You are producer, writer, composer, and director on your own Hollywood sound stage. Store your finished movies on disk. Joystick required.




**Operation Frog**
**Scholastic Software**
Disk
$29.95
Simulation of a bullfrog dissection with a twist—children can put the frog back together again! Excellent documentation.

**Playwriter: Adventures in Space**
**Woodbury Software**
Disk
$39.95
Children seven and up create a customized novel by choosing the plot direction and filling in a bare-bones outline. Production materials included, refill kits available.

**Project: Space Station**
**HES**
Disk
$24.95
Design, launch, assemble and operate a space station while coping with schedules, budgets and public relations. Ages 12 and up.

**Sky Travel**
**Commodore Business Machines**
Disk
$29.95
Learn planetary facts, print out astronomical charts and replicas of the sky, or view any astronomical happening 10,000 years into the past or future. Intended for older children to adult.

**Stickybear Series**
**Weekly Reader Software**
Disk
$29.95 each
Teaches the alphabet, numbers, opposites, shapes, reading, math, spelling and typing. Intended for preschoolers, the programs are hosted by a lovable teddybear. Excellent graphics and sound.

**Webster: The Word Game**
**CBS Software**
Disk
$29.95
Teaches word recognition and spelling. For children of all ages. Younger children may need coaching.

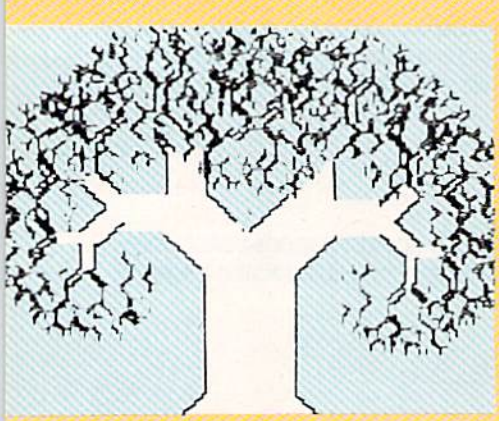
**Windham Classics**
**Spinnaker Software**
Disk
$26.95 each
Text adventure games based on classic tales. Designed for ages ten through adult.

# GRAPHICS

## Light Pens

**Blazing Paddles**
**Baudville**
Disk
$34.95
Graphics program that can use a light pen, joystick, trackball, touch tablet or paddles as the controller. Choice of several typefaces for text. Includes a printer dump.

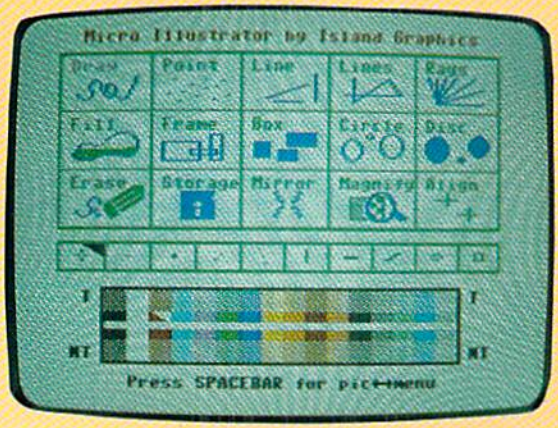
**Cadpak 64**
**Abacus**
Disk
$39.95
Graphics software for serious applications. Recommends use of the McPen light pen as a controller, but can also be used with the Keyboard. Allows two sizes of hard copy.



**Designer's Pencil**
**Activision**
Disk
$34.95
A graphics programming aid, not a direct-drawing program. Lets you create artistic programs using a logical sequence of commands. Requires no artistic ability.

**Flexidraw**
**Inkwell Systems**
Light pen/disk
$149.95
One of the best light pens available—very sensitive, with flexible graphics software. Software also has two alphabetic fonts for adding labels or descriptions to your drawings. Light pen will work with other software packages.

**LP10 and LP15**
**Tech Sketch**
Light pen/disk
LP10: $39.95
LP15: $89.95
Both pens come with a copy of *Micro Illustrator* software. LP10 is a moderately sensitive pen. LP15 is much more sensitive, allowing more precision.




**McPen**
**Madison Computer**
Light pen/disk
$49.95
Accurate light pen with sensitivity adjustment. Works well with most light pen graphics programs.

**Micro Illustrator**
**Commodore Business Machines**
Disk
$29.95
Graphics program that uses either joystick or light pen as a controller. Good documentation.

# keyboards/ music

**Master Composer**
**Access Software**
Disk
$39.95
Enter, edit and arrange up to 127 measures of music. Blocks of music can be arranged into complete scores including skipped and repeated blocks. Sound selection for voices can change every block. Help screens included. Music files can be played without the software.

**MAX Synthesizer**
**Sequential Circuits**
$795.00
Six-voice music synthesizer with six-track digital recording capability. Compatible with the 64 through a MIDI interface (not supplied). Includes 79 preset instruments and special effects, and MIDI software.

**Melodian Keyboard**
**Melodian**
$199.95
A 40-key portable keyboard with music software that connects directly to the 64. Three voices can be defined and played independently or simultaneously. Includes good documentation and music tutorial.

**MIDI Interface**
**Passport Designs**
$129.95
Musical Instrument Digital Interface (MIDI) for connecting the 64 to MIDI keyboards and drum machines. Disks containing "recorded" songs are included.

**Music Shop**
**Broderbund**
Disk
$44.95
Program for entering and playing musical scores. Graphic note entry and pull-down menus help in entering notes and setting sound. Full sound screen for creating the sound of each voice. Twelve demonstration songs included. Will work with Passport's MIDI interface.

# VOICE

**Personal Speech System**
**Votrax**
Hardware/disk
$395.00
Text-to-speech device with sharper, more understandable pronunciation than most others. Type in words (as they are actually spelled or using phonetic spelling) and the 64 will say them.

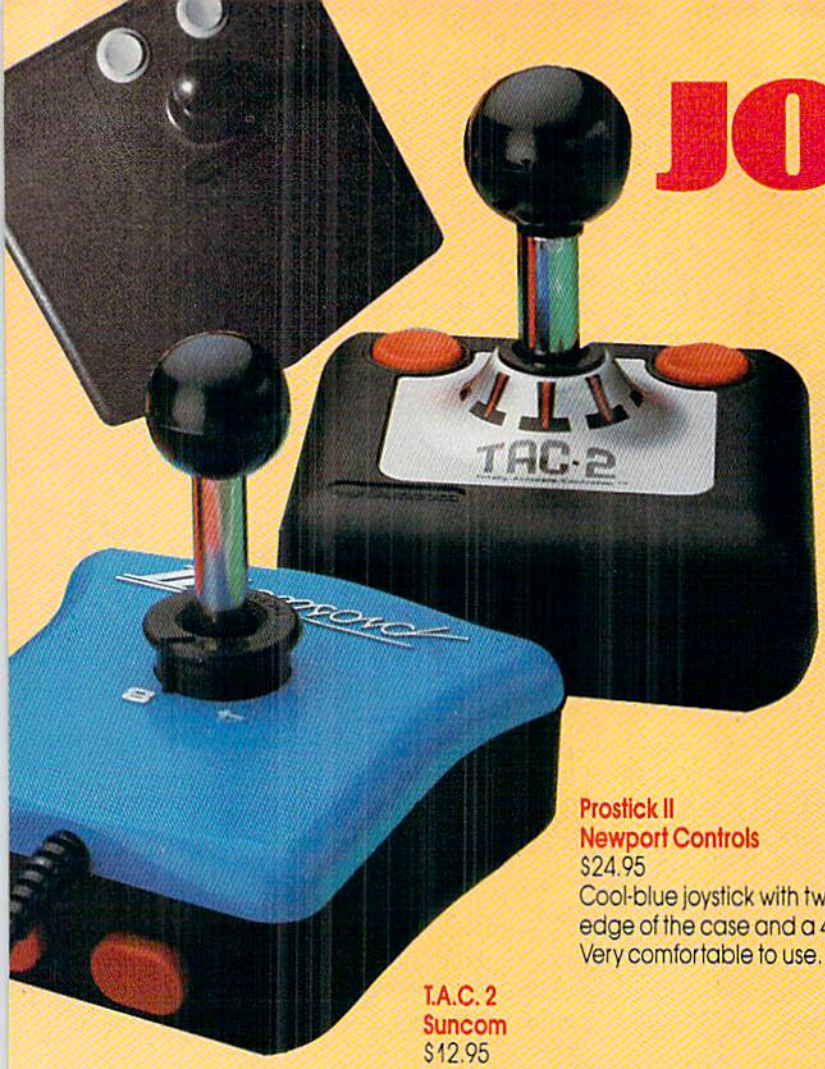
**Voice Command Module**
**Eng Manufacturing, Inc.**
Hardware/disk
$49.95
Voice recognition system that responds to the spoken word. Includes a voice-controlled card file and a voice-controlled game to demonstrate its capabilities. Lets you write your own voice-controlled programs.

# Languages

**PASCAL 64**
**Abacus Software**
Disk
$39.95
PASCAL compiler incorporating commands to use the high-resolution graphics, sound, and sprites of the 64. Allows access to machine language programs and interrupt control. Manual includes tutorial, list of references, and 64-specific commands.

**PROMAL**
**Systems Management Associates**
$49.95 (shell) or $99.95 (stand-alone)
New programming language with a new operating system and editor. Variables and procedure names up to 31 characters, single-valued functions and argument passing to procedures. Three manuals with example programs.

# JOYSTICKS

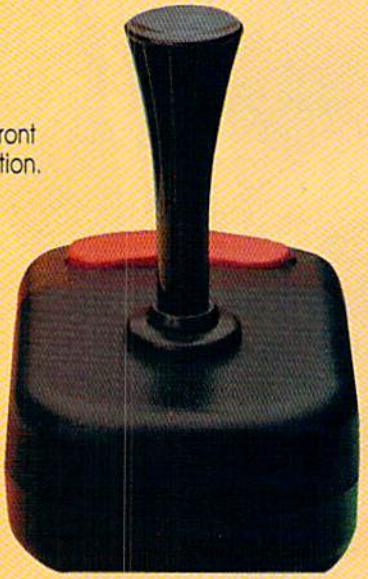



**Competition Pro 1000**
**Coin Controls**
$12.95
Light plastic joystick with a rectangular base and a finger ledge under the front of the base. A very precise and accurate joystick with a two-year warranty.

**Competition Pro 5000**
**Coin Controls**
$17.95
Heavy plastic, ball-top joystick with dual fire buttons in front. Base is square and very sturdy. Control is perfect. Two-year warranty.

**Joy Board**
**Coin Controls**
$19.95
Joystick built into a large flat plastic board with dual fire buttons. Use one hand for the joystick and other for the fire buttons. Two-year warranty.

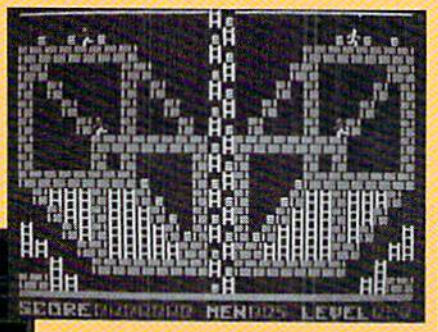
**Prostick II**
**Newport Controls**
$24.95
Cool-blue joystick with two fire buttons mounted on the front edge of the case and a 4- or 8-way collar for joystick motion. Very comfortable to use. Five-year warranty.



**T.A.C. 2**
**Suncom**
$12.95
Ball-top joystick with a rounded square base and two fire buttons. Base of stick is supported by a cone in the base. Very smooth action and a two-year warranty.

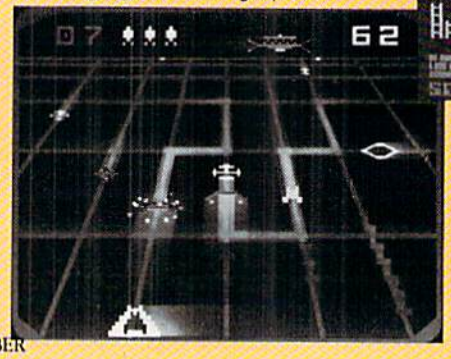
# ARCADE GAMES

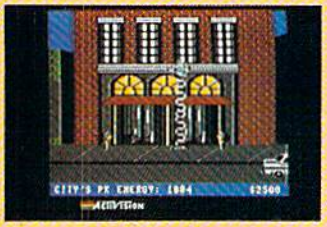
**Championship Lode Runner**
**Broderbund**
Disk
$34.95
Drawing heavily on skills acquired playing *Lode Runner*, this game adds 50 more screens. Extremely challenging.



**Beach Head II**
**Access Software**
Disk
$39.95
Sequel to *Beach Head*. Challenging; excellent graphics.

**Beamrider**
Activision
Disk
$29.95
Space blast-a-thon. Translation of the video arcade game. Excellent graphics.



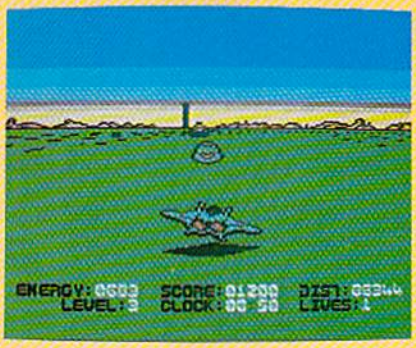



**Ghostbusters**
**Activision**
Disk
$34.95
Following the theme of the movie, this game offers intense challenge, lots of action, and a battle that combines both heroics and humor.

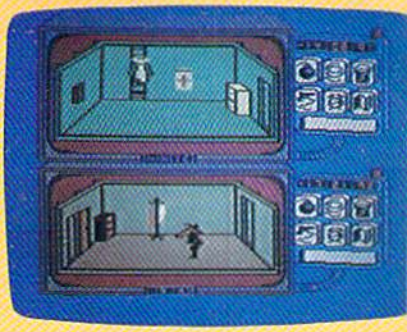
### Mail Order Monsters
**Electronic Arts**
Disk
$29.99
Customize a monster who will go to battle for you. Three levels of difficulty.

### Racing Destruction Set
**Electronic Arts**
Disk
$34.99
Construct the race of your dreams. Choose your vehicle, design your track. Race conventionally or destructively. Endless variety of combinations.

### Stealth
**Broderbund**
Disk
$29.95
Pilot a bomber-fighter craft over enemy territory. Good sound, color, graphics, animation and challenge.




### Spy vs. Spy
**First Star Software**
Disk
$29.95
Recreate the MAD magazine conflict. Excellent audio-visual effects.



### Wizard
**Progressive Peripherals & Software**
Disk
$29.95
Complete as many levels as you can before you run out of wizards. When out of levels to master, create your own. Excellent graphics and sound effects.

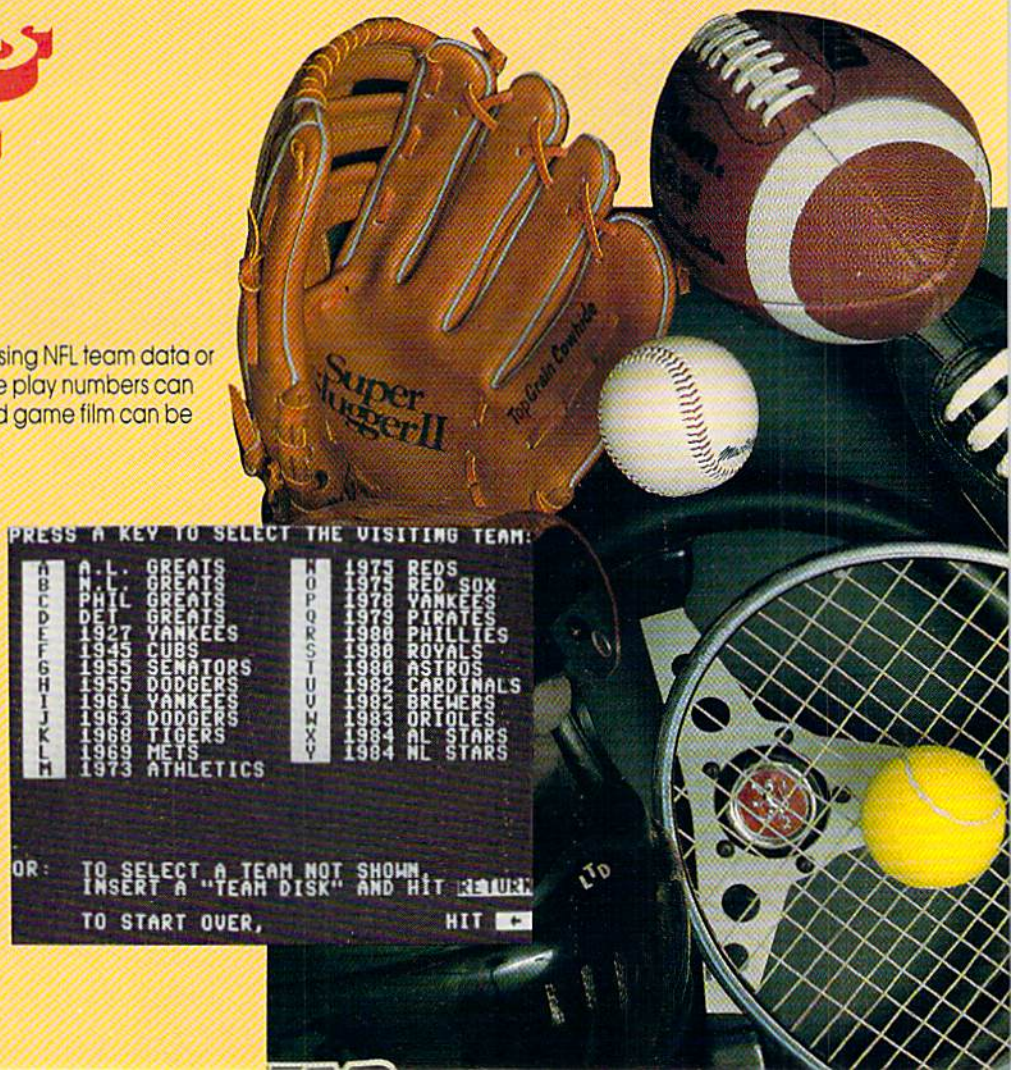
### Space Taxi
**Muse**
Disk
$29.95
You are a cab driver whose territory covers the galaxy. But there are dangers lurking in the alien lands. Nice sound effects.

# SPORTS GAMES

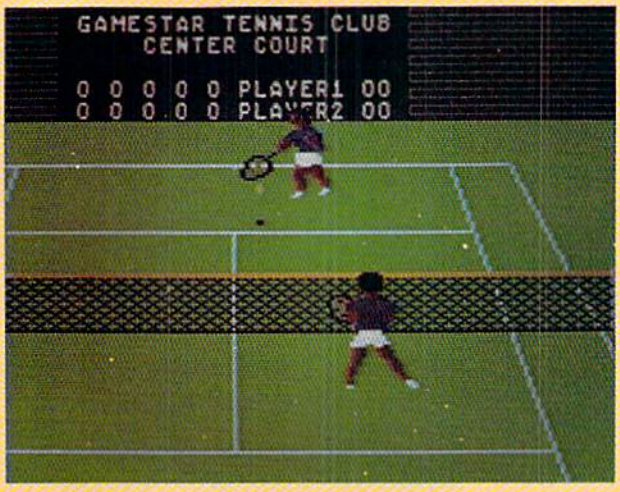
### Computer Quarterback
**Strategic Simulations**
Disk
$39.95
Statistical football game with choice of using NFL team data or building a team. Offensive and defensive play numbers can be randomized for each player. A printed game film can be created.

### International Hockey
**Artworx Software**
Disk
$24.95
Sequel to *Slap Shot Hockey*.
Now you can play against the computer. Penalty shots allowed.

### MicroLeague Baseball
**MicroLeague Sports**
Disk
$39.95
Statistical baseball simulation with a bit of managing. Full team and player selection available from all-time great teams. Full graphics supplement statistics.

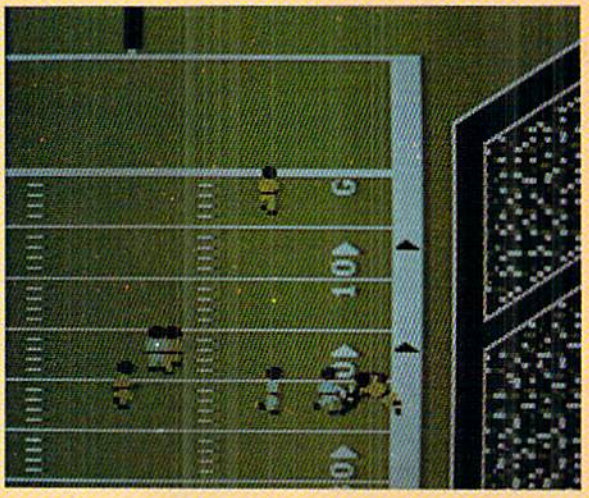


# SPORTS GAMES

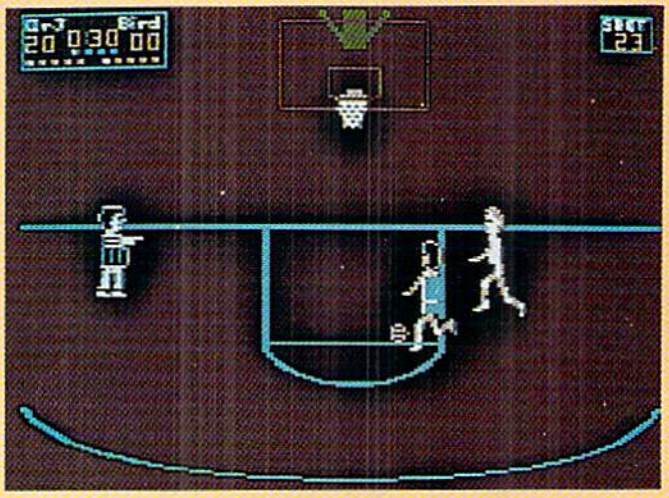



**On-Court Tennis**
**Gamestar**
Disk
$29.95
Full-graphic tennis game. Action controlled by joystick. One or two players allowed. Options include four playing styles, three court surfaces, and three different game lengths.

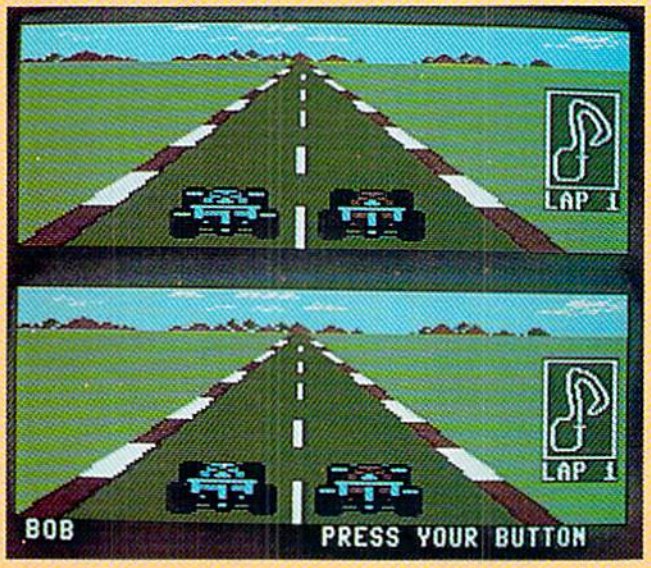
**On-Field Football**
**Gamestar**
Disk
$29.95
Joystick-controlled football game for one or two players. Passes, runs, punts, field goals and runbacks are possible. Screen scrolls in four directions to continuously display the active portion of the field.



**One-on-One**
**Electronic Arts**
Disk
$32.95
One- or two-player action basketball game. Joystick control of Larry Bird and Julius Erving allows steals, shots, rebounds and penalties. Options include the level of play, length of quarters, and first to reach a score.

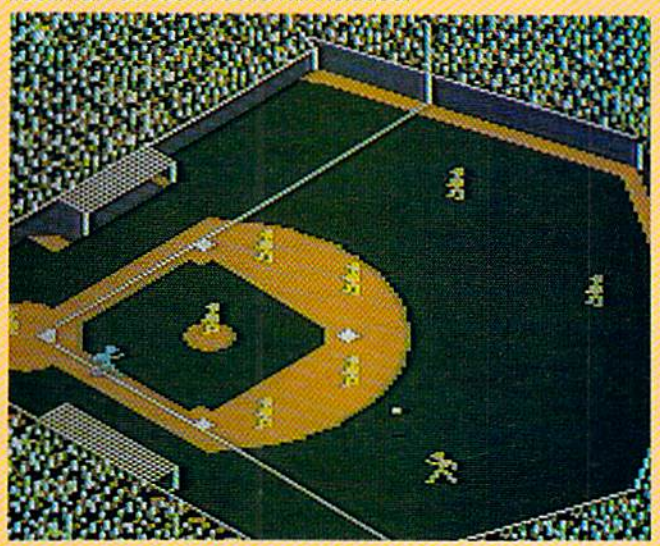


**Pitstop II**
**Epyx**
Disk
Price not available.
Split-screen one-or two-player racing game. First player to finish line wins. Pitstops are required because of fuel consumption and tire wear. Options include level of play, course, and the number of laps.

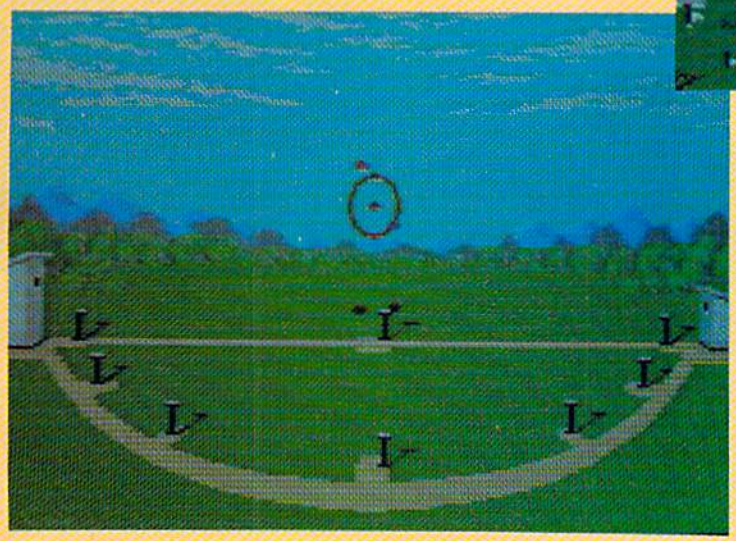



**Slap Shot Hockey**
**Artworx Software**
Disk
$19.95
A two-player ice hockey game. Joystick controls goal tending, stickhandling, shooting, and player motion. Extra features include speech synthesis, penalties, and faceoffs.

**Rally Speedway**
**Commodore Business Machines**
Disk
$29.95
A bird's eye-view one-or two-player racing game. Penalty system keeps both players on screen. Player with best time wins. Options include road conditions, top speed, acceleration, and track. Full track construction kit included.

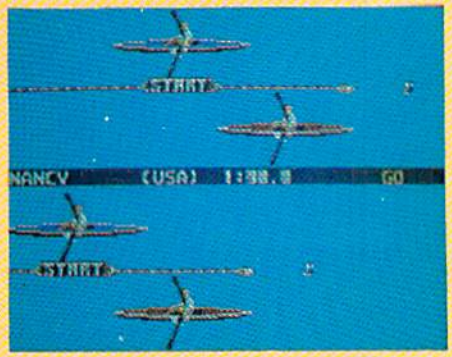


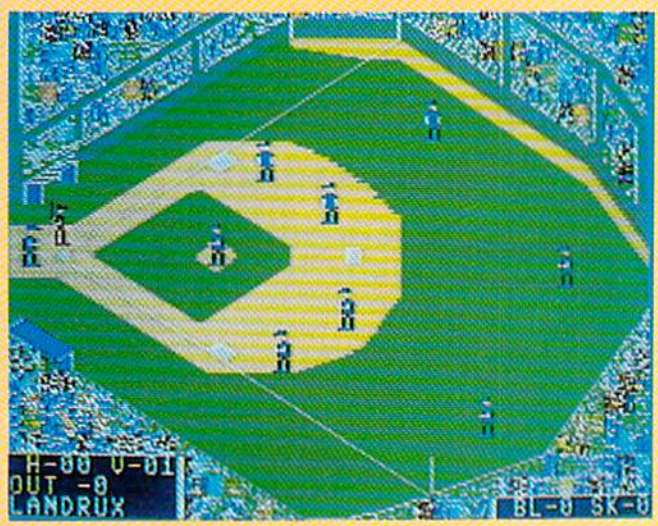
**Star League Baseball**
**Gamestar**
Disk
$29.95
A joystick-controlled baseball game for one or two players. Steals, bunts, double plays, and pick-offs allowed. Fielders who must make a play are automatically activated.



**Summer Games I**
**Epyx**
Disk
Price not available
Combination of eight Summer Olympic events. One to eight players. Great graphics. Events include diving, pole vault, skeet shooting, swimming, and running.

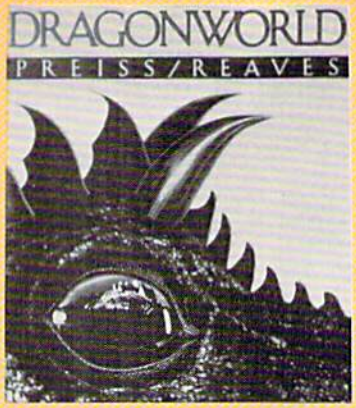
**Summer Games II**
**Epyx**
Disk
Price not available
New set of eight Summer Olympic events. Up to eight players. All events from Summer Games I can be incorporated into the game. Events include equestrian, cycling, fencing, javelin, high jump, and rowing.





**World's Greatest Baseball Game**
**Epyx**
Disk
Price not available
Joystick-controlled statistical baseball game for one or two players. Full team selection before the game. Full statistical game is included on the flip-side of the disk.

# BRAIN GAMES




**Dragonworld**
**Spinnaker**
Disk
$32.95
Text adventure that picks up where the novel left off. Unique three-panel display. Clues for the befuddled included.

**Hacker**
**Activision**
Disk
$29.95
Simulated computer malfunction results in an accidental break-in into a private computer system. No rules or clues.

**Hitchhiker's Guide to the Galaxy**
**Infocom**
Disk
$39.95
Comical text adventure based on the novel. You are wacky Arthur Dent, wandering around the galaxy after the earth's destruction.

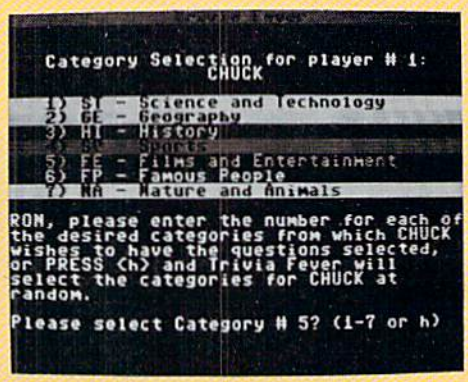
**Mindshadow**
**Activision**
Disk
$24.95
Solve the mystery of who you are and why you are stranded on a desert island in this text adventure game. Hint booklet available.

**Mindwheel**
**Synapse/Broderbund**
Disk
$39.95
Enter into the minds of four people as you try to save the world from destruction. Text adventure.

**PQ-Party Game**
**Suncom**
Disk
$45.95
Crowd-pleasing trivia game. Supplemental disks available, includes four controllers. Extremely fast-paced.

**Sorcerer**
**Infocom**
Disk
$34.95
Text adventure game sequel to *Enchanter*. However, you are expected to be stronger, quicker and smarter. Challenging.

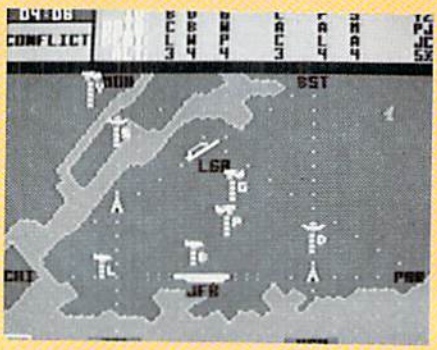
**Trivia Fever**
**Professional Software**
Disk
$39.95
Versatile trivia game that can be played with or without the computer. Endless combinations and variations. One of the best.




# SIMULATIONS

**Flight Simulator II**
**Sublogic Corporation**
Disk
$49.95
Pilot a Piper 181 Cherokee Archer from New York to Los Angeles. Includes a World War I aerial battle game.

**Kennedy Approach**
**MicroProse**
Disk
$34.95
You are an air traffic controller in some of the busiest airports in the country. Monitor flights and bring planes in for landings. Realistic sound.




# BOOKS/TUTORIALS

**At Home with BASIC**
by Henry Mullish and Dov Kruger
**Simon & Schuster**
$12.95
Book: See review in this issue.

**Can I Play with the Computer, Too?**
by Bernard Falkoff
**Banbury Books**
$19.95
Book/disk combination for pre-schoolers. Focuses on developing school readiness skills while it teaches computer literacy. Parent participation necessary. Parent guide provided with each chapter.

**The Commodore 64 Family Helper**
by Richard F. Daley and Sally J. Daley
**Scott Foresman & Co.**
$19.95

Book/disk combination with five home applications: Memo Calendar, Checkbook Manager, MiniScribe, Data Manager, and Backgammon. MiniScribe word processor alone is worth the cost of the package.

### Commodore 64 Training Tape
Hosted by Jim Butterfield
PF Communications
2727 N. Grove Industrial Drive #101
Fresno, CA 93727
Video tape: A two-hour introduction to computing, divided into 14 sessions. Commodore expert Jim Butterfield discusses applications and capabilities, but does not teach programming.

### Commodore 64 Troubleshooting and Repair Guide
by Robert C. Brenner
Howard W. Sams
$18.95
Book: See review in this issue.

### The Computer Phone Book Online Guide
by Mike Cane
New American Library
$9.95
Book: What telecommunications involves, how to set up your telecommunications terminal, how to use various networks.

### The Computer Primer
by Ann Cavanaugh
Trillium
$12.95
Book: Guide for beginners. Includes a history of computers, explanations of computer terminology, how computers work, introductory programming in BASIC, and glossary.

### How to Get the Most out of CompuServe
by Charles Bowen & David Peyton
Bantam Books
$14.95
Book: A how-to handbook for telecommunications novices. Explains the many facets of CompuServe and details money-saving shortcuts for getting around the network more easily.

### Learning Commodore 64 LOGO Together
by Kenneth Goldberg
Microsoft Press
Price not available.
Book: A LOGO classic, easily adapted to classroom use. Introductory to intermediate programming levels.

### Machine Language for the Commodore 64 and Other Commodore Computers
by Jim Butterfield
Brady Communications
$12.95
Book: Based on the machine language course Commodore expert Jim Butterfield has been giving all over the world; this one is for intermediate to advanced programmers. Very clear and easy to follow. Includes many short programming examples.

### Using the Commodore 64
by Len Lyons with Joe Campbell and Herb Moore
Addison-Wesley
$14.95
Book: A step-by-step guide to the keyboard, disk drive, datassette and printer. Some introductory programming. Explanations of how to use special applications software like word processors and telecommunications.

## FAST LOADERS

### Fast Load
Epyx
Cartridge
$39.95
Speeds up loading of all types of software for Commodore's 1541 disk drive. Also contains a DOS wedge and copy programs.

### Kwik-Load!
Datamost
Disk
$19.95
Speeds up loading of unprotected software on the Commodore 1541 disk drive by about 300%. Some protected software will not load. Disk also contains a quick copy program.

### Mach 5
Access Software
Cartridge/disk
$34.95
Easy-to-use fast loader in cartridge form for the 1541 disk drive. Disk includes a program that frees an additional 4K bytes of BASIC for use and a disk organizer program.

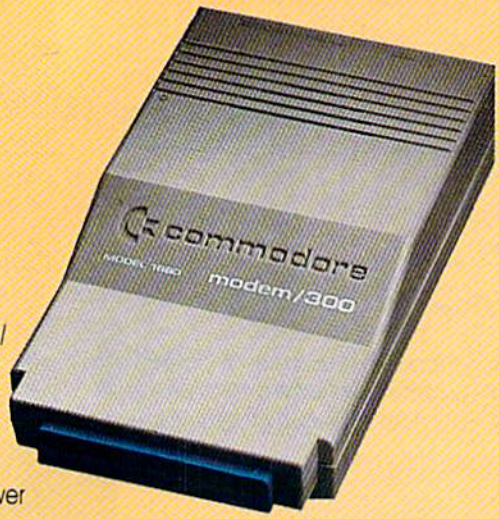
## Utilities

### Commodore Assembler Development System
Commodore Business Machines
Disk
$49.95
Editor/assembler package with a monitor and a cross reference program. The editor allows you to use the full-screen editor of the 64. The macro capability of the assembler adds a very powerful feature.

### IEA: Instant Editor Assembler
Aquarian Software
Disk
$17.95
Full-featured editor/assembler package with a monitor and a single-step feature. The entire package can reside in memory, making it fast and easy to use. Disk contains many nicely documented example programs.

### Speedwriter
Codewriter Corporation
Disk
$50.00
BASIC compiler which creates a new, faster (up to 55 times) version of the program compiled. Will compile most programs without modifications. Comes with a very good manual.

# HARDWARE




**Modem/300**
**Commodore Business Machines**
119.95
A 300-baud auto-answer/auto-dial modem with a built-in speaker. Plugs directly into the user port and works with both rotary and Touch Tone phones. Terminal software with upload/download capabilities is included on disk.

**MPP-1064**
**Microbits Peripheral Products**
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**MVP Interface**
**Allen Communication**
Price not available.
Device that connects your Commodore 64 to a laserdisc player.

**1541 Flash!**
**Skyles Electric Works**
$59.95
Hardware that increases the speed of data access between the 64 and the 1541 disk drive. Completely compatible with all 64 software. Doesn't use any memory of the 64.

**Super Box 64**
**Handic Software**
$149.95
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**Toshiba P351**
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**Information Systems Division**
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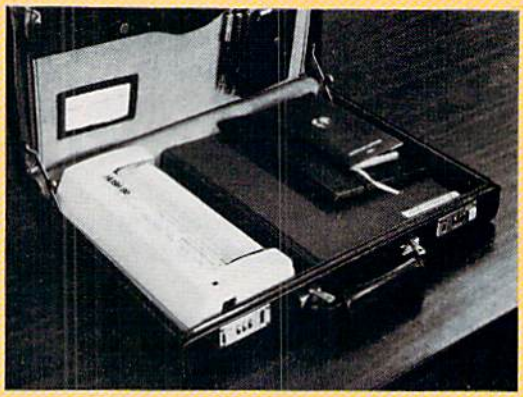
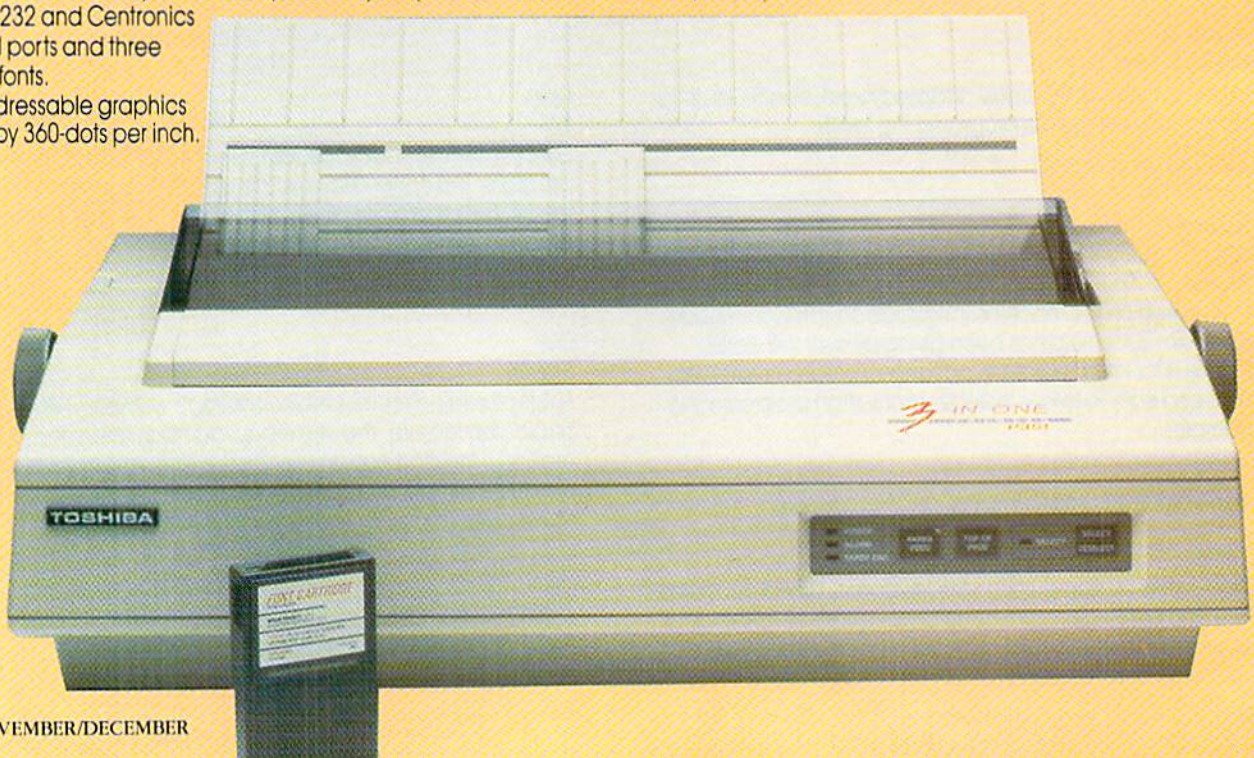
Dot-addressable graphics to 180-by 360-dots per inch.

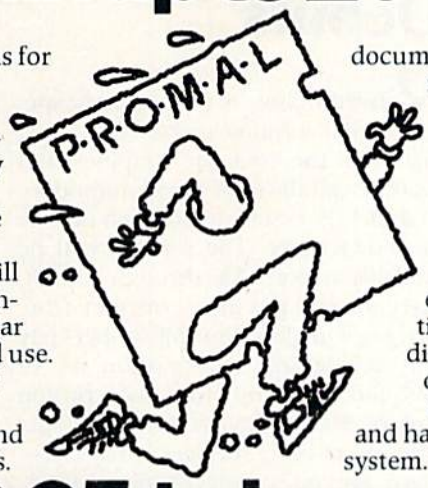


**Hush 80**
**Ergo Systems, Inc.**
$149
An 80-column, dot matrix, thermal printer. Direct serial connect to the Commodore 64 and 128. Very quiet. A good quality thermal paper is available directly from the manufacturer.

**Elite 5 CD**
**Axiom Corporation**
$289
A daisy-wheel printer with both a direct-connect serial cable and a Centronics parallel port. Print speed is 10 cps. Secondary addresses are used to select special modes such as control characters printed as mnemonics. Ninety-day "no hassle" warranty.



# It doesn't take much to make your programs run up to 20 times faster.

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**COMMODORE 64 BENCHMARK**

*(Sieve of Eratosthenes)*

| | PROMAL | BASIC | COMAL | FORTH | PASCAL |
|---|---|---|---|---|---|
| Execution Time (secs.) | **30** | 630 | 490 | 51 | 55 |
| Object Code Size (bytes) | **128** | 255 | 329 | 181 | 415 |
| Program Load Time (secs.) | **3.2** | 3.8 | 6.3 | 11.2 | 23.5 |
| Compile Time (secs.) | **8.5** | – | – | 3.9 | 108 |

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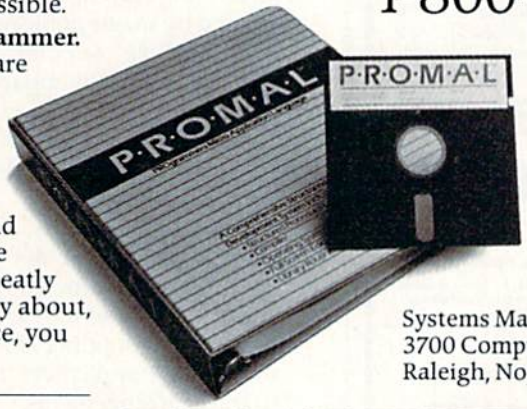


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# TELECOMMUNICATIONS

BY HOWARD MILLMAN

## QuantumLink Debuts

*With QuantumLink, you can access an on-line data base that harnesses the full range of Commodore's sound and graphics features.*

QuantumLink, a Commodore-specific telecommunications data base that uses the first-rate graphics and sound capabilities of the Commodore 64 and 128, is scheduled to go on-line in mid-October. The service will be available nationwide through Uninet. Instead of paying connect-time charges, Quantumlink subscribers pay only a one-time subscription fee of $25 and a flat monthly subscription cost of $9.95. Except for some specific extra-cost services, that's it—there are no connect-time charges. The $9.95, incidentally, is for both 300- and 1200-baud modems.

As I write this, the final shape and form of QuantumLink is still being refined. There may be some further enhancements in the final version. The service is tentatively slated to include:

- Previews (and ultimately perhaps outright purchase via downloads) of commercial software offered by major publishers.
- Commodore Special Interest Groups, bulletin boards, and Helpline.
- Electronic mail, general interest bulletin boards, and real-time on-line "chatting."
- Leisure-time pursuits, including games (with full color graphics and sound), Rocknet Music News, trivia, and movie reviews.
- Keyboard shopping for everything from appliances to books to travel arrangements.
- A special innovative learning center dedicated to using computers as educational aides, including a full encyclopedia, tests and quizzes, as well as educational software reviews.
- News of the day.
- Financial services, including banking and investment services.

The best news may be that QuantumLink is Commodore-specific. What does this mean to you? Very simply—now, instead of just settling for reading text scrolling silently on the screen (maybe accompanied by simplistic graphics), you can access an on-line data base that harnesses the full range of Commodore's impressive sound and graphics features.

One particularly appealing aspect promises to be the software preview and (perhaps eventually) purchase options. A long-standing gripe of computer users—and one with merit—is dissatisfaction with software purchases made on the basis of package or advertising hype alone. Sometimes, after using the program, purchasers realize it's not what they expected. I've long maintained this is a primary cause of software piracy. Well, this "Try it. If you like it, buy it," approach may be an answer.

The initial cost for QuantumLink is ordinarily a $25.00 subscription fee. That buys a password, account number, and the dedicated disk-based communications software you'll need to access the data base. This one-time fee will be waived for purchasers of certain Commodore-compatible modems, including the 1660 and 1670.

But what if you already own a modem? Quantum has offered to waive that $25.00 fee for 5,000 readers of *Commodore Microcomputers* and *Commodore Power/Play*. To take advantage of this limited introductory offer, call 800-833-9400 on-line (with your modem) to register. It's that simple! Remember though, this is a limited offer.

With an on-line data base as promising and innovative as QuantumLink, we'll be covering it in greater detail in future issues. Interested? Read more about it in upcoming articles, or, by joining now, you can tour with us as we explore and map this new terrain.

Quantum Computer Service
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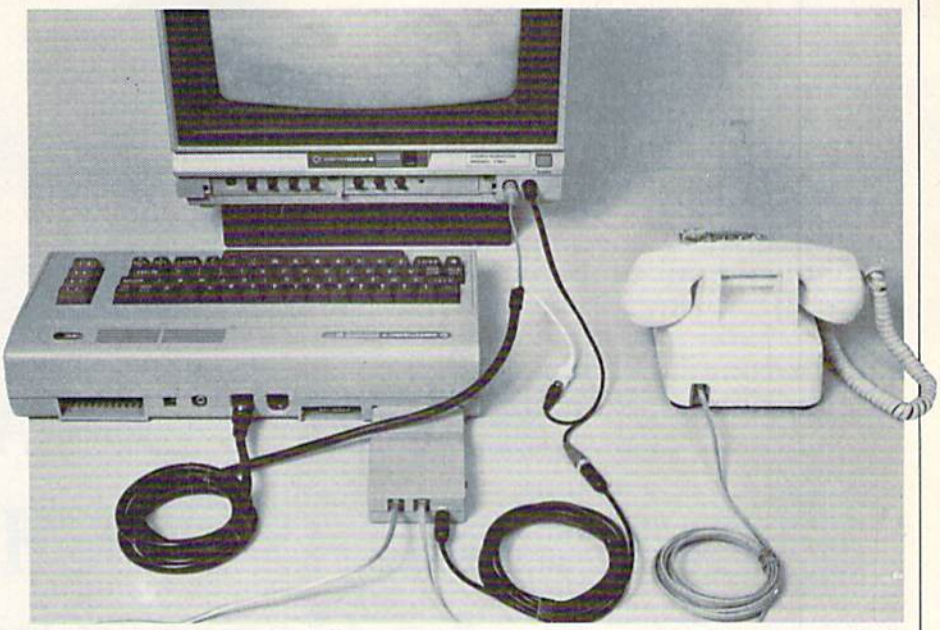
Vienna, Virginia 22180
800-392-8200

BY HOWARD MILLMAN

# How to Connect a Modem/300 or Modem/1200



After unpacking and inspecting your modem, locate the two square telephone jack receptacles, (they are marked "line" and "phone" on the Modem/300.) On the Modem/300, also locate the single round coax receptacle marked "audio in" and the answer/originate slide switch (designated "A" and "O" on the case). Included in the modem box is a six-foot telephone cable. The Modem/300 also includes two special audio cables; set these aside for now.

## Connecting the Telephone Lines

Remove your telephone's connector from the wall outlet. If it is a modern modular connector, like those used on the six-foot telephone cable provided with your modem, you can do this by pressing on the connector's plastic locking tab. If it is different from the cable's connectors, you will need to obtain a low-cost adaptor, available at most electronic and specialty stores, to connect the modem cable's modular plug to your wall outlet.

Plug one end of the six-foot telephone cable into the modem's "line" receptacle. Plug the other end into your telephone's wall receptacle, using an adaptor if required. If you would like to leave your Commodore modem connected to the telephone line, you may plug your telephone's modular plug into the receptacle marked "phone" on your modem; when your modem is not in use, your telephone will operate normally.

If you are using a Commodore Modem/1200, you may skip the next step and go directly to Installing the Modem.

## Connecting the Audio Cable

To use the tone-dialing feature of the Modem/300, the audio output of your Commodore computer must be connected to the "audio in" receptacle of the modem. Follow the instructions below which describe your installation. (The Modem/1200 does not require this connection to provide tone-dialing.)

A. *If you are using a television with your Commodore computer:* Locate the short audio cables included with your Modem/300. One of these has a large connector on one end with five pins, known as a "DIN plug," and a connector known as an "RCA plug" on the other end. Insert the larger DIN connector into the audio/video receptacle on the back panel of the computer. This receptacle is located next to the computer's serial port, used for disk drives and printers, and is similar in appearance. Insert the RCA plug, on the other end of the cable, in the "audio in" receptacle of the Modem/300. Set the other audio cable aside; you will not need it to use your modem.

B. *If you are using a monitor with your Commodore computer:* The audio signal from your computer is included in the cable used to connect your video monitor to the computer. Locate the two audio cables included with your Modem/300. One of these, known as a "Y-adaptor," has three connectors: a male "RCA plug," and, at the other end, two female "RCA jacks." Set the other audio cable aside; it will not be used. You will also need a "coax" cable, not included with your Modem/300, with a male RCA plug on each end. These are available at most electronic and specialty stores in various lengths; a three-foot cable is usually sufficient.

Unplug the audio connector at the end of your monitor cable from the monitor's audio port. Plug the male RCA plug of the Y-adaptor into the monitor's audio port, and the monitor cable's audio connector into either one of the Y-adaptor's female RCA jacks. Now plug one end of the "coax" cable into the remaining RCA jack of the Y-adaptor, and the other end into the "audio in" receptacle of the Modem/300.

## Installing the Modem

If you are using a Modem/300, move the answer/originate slide switch to the "O" position.

Make sure that your computer is turned off. Locate the computer's user port; when facing the front of the computer, this is located on the left-hand side of the computer's back panel. Insert the modem carefully into the user port, making sure that the computer's edge connector and the modem connector are properly aligned.

Turn on your monitor or television, disk drive (or cassette), and the computer. Your modem is powered by the computer itself. Now load your telecommunications software, and follow the instructions included with it for operating your Commodore Modem/300 or Modem/1200. C

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In case you ever get lost or confused, just type in "H" for help, and we'll immediately cut in with instructions that should save the day.

Besides, you can either ask questions online through our Feedback service or phone our Customer Service Department.

## How to subscribe.

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REVIEWED BY TOM BENFORD

# Reset Master

**Computer:** VIC 20, Commodore 64, SX-64
**Publisher:** Master Software
6 Hillery Court
Randallstown, MD
21133
**Medium:** Hardware reset module/ serial port extender/ program recovery system
**Price:** $24.95

Up to now, the only way to regain control of your computer after a crash was to shut it off, then turn it back on again. And in doing so, everything in memory was lost. And if you didn't save the program prior to running it, you had to key it in all over again from scratch. All this because there's nothing you can do to recover a program from a lockup, right? Wrong! You can get yourself a Reset Master from Master Software, plug it in, run the "Renew" program and be protected from fatal crashes.

A listing for several versions of a program called "Renew" is supplied with the Reset Master module (versions for an unexpanded VIC, a 3K expanded VIC, an 8-24K expanded VIC and an SX-64 or 64 are included). No matter which version(s) you need, the programs are very short, so keying them in is no big deal. The program should be saved to disk or cassette before you do anything further. This "Renew" program is used in conjunction with the Reset Master. Together they allow you to recover a program from a fatal crash.

The Reset Master also permits you to have two printers with different device numbers connected at the same time, since it provides you with an extra serial port. The module has a two-foot cable attached to it, so it acts as a serial port extension cord, as well. The extra length allows you to move your printer further away from the keyboard or it can be used to keep the disk drive and printer on opposite sides of the computer.

Physically, the Reset Master consists of a blue plastic box with a red momentary-contact switch mounted on its top. A two-foot cable extends from the side of the box with a DIN plug on the end. This plug inserts into the extra serial port on your disk drive. The front of the Reset Master box has two serial-port jacks mounted on it. Your printer plugs in to either of these ports, and you have an extra serial port available to boot! This extra port can be used to keep a second printer set to a different device number "online" at all times, negating the need to swap cables. Since I use both a daisy-wheel printer and a dot-matrix unit in the course of my work, this feature is very handy to have. I keep the dot-matrix printer set to device number four while the letter-quality job is set for device number five. Either one can be activated by specifying the desired device number from the software. Disconnecting one and plugging in the other is a nightmare that the Reset Master has banished forever.

*Before Reset Master, your only way to regain control of the computer after a crash was to shut it off, then turn it back on again.*

Since it was originally released, the 64 has undergone several subtle engineering improvements that have dealt mainly with internal changes to the circuitry. These changes do affect the Reset Master to some degree. Not to worry, though, since Master Software has taken all of that into consideration and provided a means of getting around the problem.

On the right side of the unit are two screws with a short wrap of light wire around one of them. If you have one of the early 64's, you might have to access these screws. All that's required is extending the "jumper" wire from one screw to the other and retightening them (no soldering is involved). The instruction sheet tells how to do this explicitly, and diagrams are provided. Most models of the 64 won't need this slight modification. (For you technically curious readers, jumping these two screws with the wire simply connects a resistor into the circuitry.)

In actual practice, here's how the Reset Master and "Renew" programs work. Assuming you've loaded (or typed) in the "Renew" program, you then run it. A screen message informs you, "TO RENEW, TYPE: SYS 50000:CLR" and the READY prompt appears beneath it. (50000 is the starting address of the ML RENEW program for the C-64 or SX-64; this number will be different for the various VIC versions.)

*Continued on Pg. 122*

# Commodore 64
# GRAPHICS CONTEST

*Create gorgeous graphics on your Commodore 64 using your favorite graphics package or programming aid—and maybe YOU will be our grand prize winner. Winners will receive a cash prize and the winning graphics screens will be published in an upcoming issue of* Commodore Power/Play.

Carefully read the rules below. Then fill out the official entry blank and submit it with your best graphics screens on disk to: ***Commodore Power/Play*, 1200 Wilson Drive, West Chester, PA 19380, ATTN: GRAPHICS CONTEST.**

**DEADLINE FOR ENTRY: JANUARY 31, 1986 MAXIMUM 2 SCREENS PER CONTESTANT**

**RULES: Commodore 64 Computer Graphics Contest**

1. You will be judged on originality, creativity and best use of the Commodore 64's unique graphics features.

2. A maximum of two screens per person is allowed. If a contestant submits more than two screens for consideration, all of that person's entries will be invalidated.

3. All entries must be submitted on disk, 1541 format, with the following information marked clearly on the disk's label:
   a. Contestant's name, address and phone number
   b. Picture title(s)
   c. Graphics package or programming aid used to create the graphics
   d. The words "GRAPHICS CONTEST"

4. Make sure your mailer will protect your disk from damage. Affix sufficient first-class postage. Mail your disk and the official entry blank to the address shown above in time to reach us by the January 31, 1986 deadline.

**GENERAL CONDITIONS**

Contest is open to any U.S. resident except employees of Commodore Business Machines, Inc., Commodore Electronics Ltd., Commodore International Ltd., their advertising and promotional agencies and their immediate families.

Entries will be judged by a panel of nationally known computer artists. Each entry must be wholly the product of the developer in whose name the entry has been submitted. Outside assistance is expressly prohibited and will provide cause for disqualification. An entry must consist of no more than two self-contained, complete programs on disk. A photo of the screen display or a program print-out does not constitute an acceptable entry. Entries become the property of Contemporary Marketing, Inc., which reserves the right to adapt, use or publish all entries received. No disks will be returned, so be sure to make a copy of your entry before you submit it to the contest.

Contemporary Marketing, Inc. assumes no responsibility for lost, late or misdirected entries. Non-winning entries will not be acknowledged. Winners will be notified by February 28, 1986. Taxes on cash prizes are the winners responsibilities.

Offer void wherever prohibited or restricted by law.

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PICTURE TITLE #1 _____

PICTURE TITLE #2 _____

BY KEN FRENCH
AND LOUIS R. WALLACE

# Multiscreen for the Commodore 64

*Create text screens to use as help screens, data screens, game instructions, or whatever you need.*

Have you ever had the need for more than one text screen in a program? Sometimes they can be very useful. For example, you can use them as help screens, or for different levels or stages in a game. One way of creating extra screens is to buy a BASIC language extension, such as *Simons' BASIC,* and load your screen from the disk. While it is nice to be able to do that, it does take a few seconds to load the screens, and of course it takes some dollars to buy the language extension. Now you have a better way.

What we have done is create a small BASIC extension called Multiscreen. When you are using Multiscreen, you have five additional low-resolution color screens, as well as your normal screen. That gives you six screens and color memories in all. And, best of all, it doesn't take any memory from BASIC, so you have all the normal space for your BASIC program.

Multiscreen consists of five screens, or slots, that are stored in the RAM under the BASIC operating system, and also in part of the block of free RAM that begins at $C000 (49152). You have room for DOS 5.1, and there are several hundred bytes still free from $C801-$C9FF (51201-51711) for your own machine language programs. By using the RAM under BASIC and at $C000, we leave all the normal BASIC programming memory untouched and available to you. The machine language for Multiscreen is from $CA00-$CBFF (51712 to 52223).

Not only can you store any color text screen to one of these slots, you can also save the contents of any slot to disk for later use! So your program can use your normal text screen, the five extra ones in slots one through five, and dozens more on disk. And when recalling a screen from a slot, you don't have to wait, because the screen is transferred instantly.

How do you use it? We set up three commands using the SYS statement, which can be executed very swiftly from your BASIC program. The base address of Multiscreen is 51715, and you use it in a program by way of a SYS statement, followed by the required parameters for each function separated by commas. The first command is for saving a screen to a slot or loading a screen from one of the five screen slots in memory. The syntax is SYS AD+6,F,slot#. AD is the base address. The F is either zero (for saving to) or one (for recalling from). The slot number is from one to five. The second command is for saving a slot to disk. Its syntax is SYS AD,slot#, "filename". Again, the slot number is from one to five and "filename" is the name you have given the screen. The third command loads a screen from disk into a specified slot. Its syntax is SYS AD+3,slot#,"filename".

Listing 1 is Multiscreen, which is a BASIC program that pokes in a machine language program from data statements. Be sure to save it before you run it. Listing 2 is a demonstration program for Multiscreen, and requires you to run Multiscreen before you can use it.

Listing 2 uses the Multiscreen commands and allows you to create screens for other uses. It allows you to edit a screen, load a screen from disk to any of five screen slots and save a screen to disk from any of five screen slots. You can easily prepare pictures consisting of text and/or graphic characters, using the 64's full-screen editor.

When you use the Multiscreen editor, you can put any character—reverse or normal—in any of 16 colors on the screen. With practice, it is possible to make some very nice pictures using the Commodore 64's special characters. Use the cursor keys to move around the screen, typing whatever character you need. Don't press RETURN until you are ready to have the screen stored in a slot. To change colors, use the CRTL and Commodore logo keys, as you normally do. The INST/DEL and CLR/HOME keys also function normally.

When you have finished your picture, press RETURN and your design is saved in one of the slots (you are asked which one). You can then return to the editor to make another picture, save what you have to disk, or quit. If you do save anything, it is on the disk for later recall to be edited or used in a program. When not in the editing mode, you can press keys one through five to recall those slots for viewing or press I (for instructions) to return to the menu page.

Multiscreen can be used for business programs, help screens, game screens and many other types of programs. It will give programs ready access to screens of data without having to wait for the disk. C

**Before typing in these programs, read "How to Enter Programs."**

**Listing 1. Multiscreen**

```
10 REM MULTISCREEN'BLRA
20 FOR Z=51712 TO 52058:READ Y
   :POKE Z,Y:NEXT'GSLF
30 END'BACY
40 AD=12*4096+10*256+3'FOXG
50 :'ABHB
60 SYS AD,SLOT #,"NAME"
   :REM SAVE SLOT TO DISK'CYNL
70 SYS AD+3,SLOT #,"NAME"
   :REM LOAD SLOT FROM DISK'DCHN
80 :'ABHE
90 SYS AD+6,0,SLOT # :REM   SAVE
   SCREEN TO SLOT IN MEMORY'DLCQ
100 SYS AD+6,1,SLOT # :REM RECALL
    SCREEN FROM SLOT IN MEMORY'DPTI
110 :'ABHV
120 REM SLOT # IS FROM 1 TO 5'BPEB
130 :'ABHX
140 REM THE PROGRAM EXISTS'BQDE
```

```
150 REM FROM $CA00 TO $CBFF
    (51712-52223)'BEFH
160 :'ABHB
170 REM THIS WILL NOT INTERFERE WITH
    DOS 5.1'BFXL
180 :'ABHD
190 REM IT WILL USE ALL MEMORY
    FROM'BWEL
200 REM $A000 - $C800 (40960-51200)
    'BYPB
210 REM'BARW
220 REM'BARX
230 DATA 76,168,202,76,182,202,76,
    243'BDXE
240 DATA 202,32,253,174,32,235,183,
    165'BEDG
250 DATA 20,133,2,224,0,240,38,
    224'BAQG
260 DATA 6,176,34,202,188,80,203,
    189'BCWH
270 DATA 75,203,170,165,2,208,23,
    134'BCFI
280 DATA 253,132,254,169,0,133,251,
    169'BEHK
290 DATA 216,133,252,32,90,202,169,
    4'BCGK
300 DATA 133,252,32,90,202,96,32,
    35'BBHC
310 DATA 203,134,251,132,252,169,216,
    133'BGWE
320 DATA 254,169,0,133,253,32,90,
    202'BCFE
330 DATA 169,4,133,254,32,90,202,
    76'BBOF
340 DATA 48,203,160,0,162,3,177,
    251'BBEG
350 DATA 145,253,200,208,249,230,252,
    230'BGUI
360 DATA 254,202,208,242,177,251,145,
    253'BGFJ
370 DATA 200,192,232,208,247,230,252,
    230'BGRK
380 DATA 254,96,147,13,13,67,79,
    80'BAFK
390 DATA 89,82,73,71,72,84,32,49'BXLL
400 DATA 57,56,52,13,76,79,85,73'BXND
410 DATA 83,32,87,65,76,76,65,67'BXTE
420 DATA 69,32,38,13,75,69,78,32'BXJF
430 DATA 70,82,69,78,67,72,13,0'BWHF
440 DATA 162,0,189,122,202,240,6,
    32'BBXH
450 DATA 210,255,232,208,245,96,32,
    253'BEGJ
460 DATA 174,32,158,183,224,0,240,
    48'BCMJ
470 DATA 224,6,176,44,202,188,80,
    203'BCNK
480 DATA 132,252,188,75,203,132,251,
    188'BFLM
490 DATA 85,203,132,254,169,232,133,
    253'BFGN
500 DATA 32,61,203,32,189,255,32,
    35'BBKE
510 DATA 203,169,8,170,32,186,255,
    169'BDBF
520 DATA 251,166,253,164,254,32,216,
    255'BFKH
530 DATA 76,48,203,32,253,174,32,
    158'BCTH
540 DATA 183,224,0,240,37,224,6,
    176'BBJI
550 DATA 33,142,90,203,169,8,170,
    160'BCJJ
560 DATA 0,32,186,255,32,61,203,
    32'BABK
570 DATA 189,255,174,90,203,202,188,
    80'BESM
580 DATA 203,189,75,203,170,169,0,
    32'BCMM
590 DATA 213,255,96,165,0,9,1,133'BYLN
600 DATA 0,165,1,41,254,133,1,96'BXJE
610 DATA 165,0,9,1,133,0,165,1'BVDF
620 DATA 9,1,133,1,96,32,253,174'BXRG
630 DATA 32,158,173,32,130,183,166,
    34'BDMI
640 DATA 164,35,96,0,0,0,0,0'BTZI
650 DATA 160,168,176,184,192,167,175,
    183'BGEL
660 DATA 191,199,0'BJWI                 END
```

**Listing 2. Multiscreen Editor**

```
10 PRINT"[RVOFF,CLEAR,RIGHT,SPACE7,
   RIGHT2,YELLOW]MULTISCREEN
   EDITOR"'BAQF
20 A=53280:POKE A,0:POKE A+1,0'EPVD
30 PRINT"[DOWN2,RIGHT10,BLUE]
   GENERAL COMMANDS[GREEN]"'BACF
40 PRINT"[DOWN,RIGHT7,CYAN]S[GREEN]
   AVE SLOT TO DISK"'BAXG
50 PRINT"[RIGHT7,CYAN]L[GREEN]
   OAD SLOT FROM DISK"'BAHI
60 PRINT"[RIGHT7,CYAN]E[GREEN]
   DIT A SCREEN"'BAWH
70 PRINT"[RIGHT7,CYAN]I[GREEN]
   NSTRUCTIONS"'BABI
80 PRINT"[RIGHT7,CYAN]1-5[GREEN]
    RECALL A SLOT"'BANK
90 REM THESE ARE SPECIFIC TO THE
   EDITOR'BCMN
100 PRINT"[DOWN3,RIGHT10,BLUE]
    EDITOR COMMANDS"'BAIB
110 PRINT"[DOWN,RIGHT7,CYAN]RETURN
    [GREEN] TO END DRAWING"'BALE
120 PRINT"[RIGHT7,GREEN]USE [CYAN]
    CURSOR KEYS[GREEN] TO MOVE"'BAEF
130 PRINT"[RIGHT7,CYAN]COLOR[GREEN],
    [CYAN]INST/DEL[GREEN], [CYAN]
    CLR/HOME[GREEN]"'BAUI
140 PRINT"[RIGHT7,GREEN]AND [CYAN]
    REVERSE ON/OFF"'BAIG
150 PRINT"[RIGHT7,GREEN]
    KEYS ALL WORK NORMALLY "'BASH
160 PRINT"[GREEN]"'BAHB
170 AD=51715:  REM BASE ADDRESS'CTKI
180 PT=1'BDJE
190 GET A$ : REM    MAIN LOOP'CLUI
```

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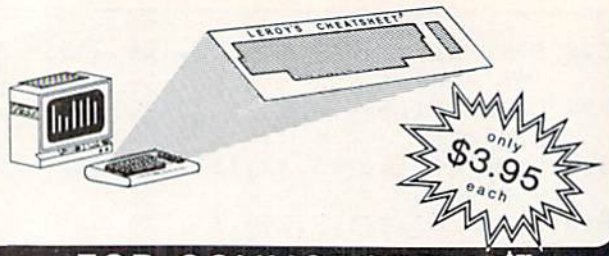


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```
200 IF A$="S"THEN FL=0:GOSUB 300
    : REM SAVE SLOT TO DISK'GYOG
210 IF A$="I"THEN RUN: REM
    INSTRUCTIONS'FPEE
220 IF A$="L"THEN FL=3:GOSUB 300
    : REM LOAD SLOT FROM DISK'GBPI
230 IF A$="E"THEN GOSUB 440
    : POKE 53280,0:  REM EDITOR'GUOH
240 IF RF=1 THEN RF=0:A$="I"
    :GOTO 210'GNYH
250 AS=VAL(A$):IF AS=>1 AND AS=<5
    THEN SYS AD+6,1,AS:PT=AS'MBRP
260 GOTO 190'BDJD
270 REM END OF MAIN LOOP'BNOH
280 REM'BARE
290 REM LOAD OR SAVE A SCREEN TO A
    SLOT'BYPM
300 PRINT"[CLEAR]"'BATX
310 INPUT"WHAT IS THE SCREEN NAME";
    NM$'BENF
320 IF FL=3 THEN PRINT"WHAT SLOT
    SHOULD IT BE STORED INTO ?";'EETM
330 IF FL=0 THEN PRINT"WHAT SLOT
    SHOULD IT BE SAVED FROM ?";'EEVM
340 GET TP$'BDEC
350 TP=VAL(TP$)'CHBF
360 IF TP$="*"THEN RETURN
    : REM ABORT'FJPI
370 IF TP>=1 AND TP<=5 THEN PT=TP
    :PRINT TP:GOTO 390'KRNP
380 GOTO 340'BDGG
390 SYS AD+FL,PT,""+NM$'DLUK
400 SYS AD+6,1,PT'CIWB
410 RETURN : REM RETURN FROM
    LOAD/SAVE'CUHF
420 REM'BARA
430 REM EDITOR'BGKD
440 POKE 53280,5'BHYD
450 PRINT"[CLEAR,DOWN2,WHITE]
    DO YOU WISH TO EDIT A SCREEN IN
    MEMORY?"'BAHO
455 PRINT"[DOWN2,RVS,CYAN]Y[RVOFF,
    WHITE]ES/[RVS,CYAN]N[RVOFF,WHITE]
    O"'BASN
460 GET D$'BCJF
470 IF D$="N"THEN 520'DFYI
480 IF D$<>"Y"THEN 460'EFQJ
490 EF=1:PRINT"WHICH SLOT DO YOU
    WANT";'CFPP
500 INPUT SN:IF SN>=1 AND SN<=5 THEN
    520'IMVH
510 GOTO 500'BDEB
520 PRINT"[CLEAR]WHICH SLOT IS THIS
    SCREEN FOR? 1-5";'BBTL
525 INPUT SL$:SL=VAL(SL$)
    :PRINT"[CLEAR]";'ENCM
530 IF SL<1 OR SL>5 THEN 450'FJFH
540 IF EF=1 THEN EF=0:SYS AD+6,1,
    SN'GPPK
550 PRINT"[HOME]":OPEN 1,0:INPUT#1,A$
    :CLOSE 1'ELGI
560 REM END OF EDITOR LOOP'BPBJ
570 SYS AD+6,0,SL:RETURN'DJQJ
```

END

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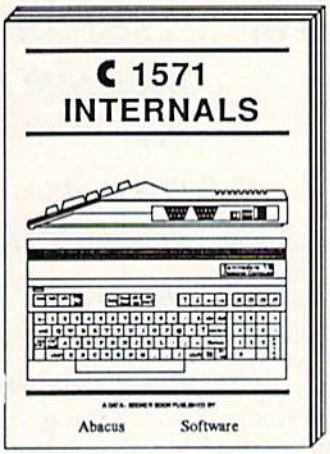


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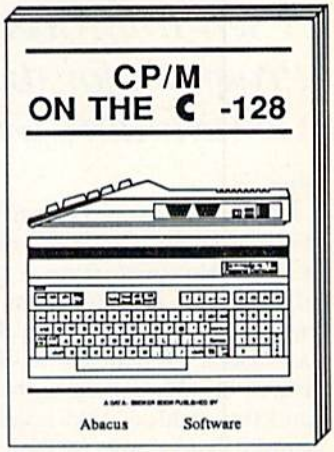


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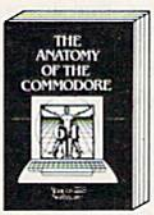


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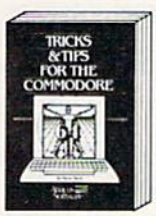


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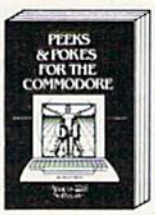


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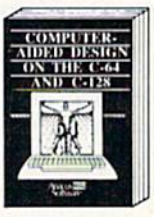


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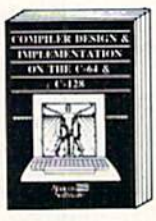


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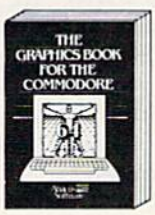


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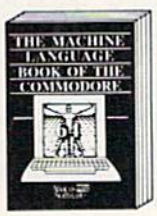


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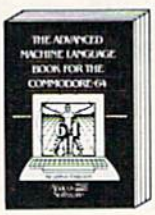


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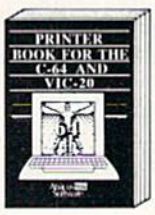


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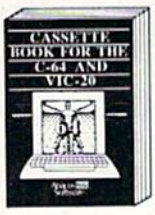


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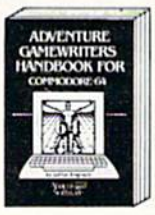


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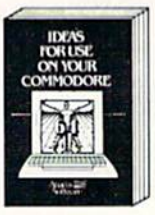


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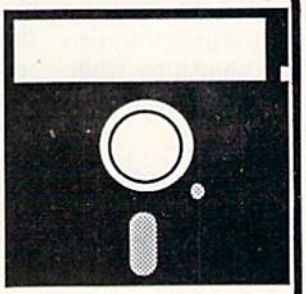

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BY TIM THOMPSON

# Pygmalion

## *A Self-Improvement Program for the Commodore 64*

There is a lovely fable from ancient Greece about a sculptor named Pygmalion. He spent many years creating the statue of the most beautiful woman he could imagine, the goddess Aphrodite. When his work was finished, he fell in love with the statue, and the goddess, taking pity on him, caused it to come to life. As Galatea (that was her name) descended from her pedestal, she saw Pygmalion—sweaty, disheveled, unshaven, worn out by his labor. Touching his cheek, she said to him, "Dear husband, you worked so hard to make me beautiful, now it is my turn to work on you." I have chosen to call this program by this ancient name because it is a self-improvement program using subliminal messages.

Pygmalion uses both text (flashing messages) and graphics (animation) on the same screen to create subliminal stimulation for self improvement. Subliminal stimulation takes place below the threshold of conscious awareness, so you don't realize the messages are flashing, but is recognized and acted on by the *un*conscious.

This program will *not* hypnotize you, but *will* help you relax. It is in this relaxed state that the messages you have embedded in the program will be most effective to help you break habits (smoking, overeating) and/or initiate self-improvement behavior (self-confidence, assertiveness, stress relief). *You* will create these messages yourself, *you* will control the program, *you* will always be in charge. The computer cannot "program" you, it can only display to you what you want to see.

### Entering and Running the Program

Type the program from the listing, but delete all "REM" and ":" statements. Change lines 10-50 to your own subliminal messages and save the program to tape or disk. You must save the program first as a precaution. It uses pokes for the animation sequence, and if you have made a typing error, the program can get into the BASIC section of memory and destroy itself. As long as you have a saved version, you can call it back and correct it without re-typing the whole thing.

*A self-directed message is one that has "I feel" content, such as, "I feel self confident," or, "I feel thinner."*

After your program is entered and you type RUN, the screen will clear and display a title and three instruction screens. It will ask for an animation speed from the user and then go to work. The screen will clear and the computer will begin to draw a series of concentric rectangles in clockwise motion, starting with the outermost rectangle, moving inward to the center of the screen. Each rectangle is drawn in a different color picked at random by the computer. When the screen is filled, the computer will flash a message, picked at random, on the top line, and begin to draw the rectangles again, tracing over those that are already displayed.

Since the colors of the rectangles are picked at random, including colors that have already been used, the pattern and sequence of rectangles is never repeated. The motion of the rectangle-drawing procedure invites the eye to follow it into the center of the screen. The message flashed is not consciously readable, and hardly noticeable. The program uses the screen memory map for the animation while it uses simple PRINT statements to produce the messages.

### Subliminal Message Content and Technique

You will have to enter the subliminal messages into the program listing before you run it. After you have done so, you can save the program to tape or disk, change the messages and save it again (using a different file name, of course), thus building a library of programs dealing with different topics.

I have allowed room for five messages in the program, but you can add more if you like. Be careful not to go overboard and write too many messages. A few will do; you don't need a lot. The message content can be anything you like, but is usually most effective when it is simple, positive, and self-directed. Since you only have 40 characters to use per message, the design of the program will help you keep your message simple. A self-directed message is one that has "I feel" content, such as, "I feel self confident," or, "I feel thinner." This works because your subconscious mind is primarily concerned with two things: self and feeling. By targeting your messages in this way, you'll get the most out of this program.

The topics you choose can be anything that interests you, but, in order to be effective, they should cover areas that are of genuine concern to you. Something you don't care about won't interest you on any level, conscious or subconscious, and will be a waste of time.

Also, you should gear your messages toward positive personal growth. Using messages such as, "I feel angry," or, "I feel stupid" are not only counterproductive, they won't work. Your mind (which is infinitely more powerful than a computer) will simply reject the information because it conflicts with the natural inclination of the mind to feel good.

Finally, be ethical with this program. Don't show it to anyone without first explaining what it does (would you like to be tricked by a computer program?) and allowing that person to decide whether or not he or she wants to view it. There is a famous story about a movie theatre sending subliminal messages, "Buy popcorn," during a film. The management claimed that popcorn sales increased dramatically, and the government clamped down on the practice. There is no guarantee that this program will work for you that way, but to try to use it in such a fashion is an

abuse of technology. However, if you use the techniques described here wisely and well, there is a good possibility that you will have found a method which will help you improve how you feel about yourself, and consequently, how you interact with the world around you.

### Setting up the Messages

The first lines of the program listing provide room for the subliminal messages that you will embed into the program. I have provided five blanket statements to show you how it is done. The technique uses the standard Commodore string-variable protocol. You can embed a color command at the beginning of each message if you want it to appear in a color, and that color will remain in effect until a new color command is encountered. Embedding a color command does *not* take away from the allowable character length of the string, nor does it affect the color of the animation. Since the messages use the top screen line only, you have 40 characters to work with—but remember that punctuation and spaces count as characters.

To make things easy, after you type in the program listing, list lines 10 to 50 and write your messages over what is already there. Each of my messages is 40 characters long, so if you stay within their limits, you can't go wrong. And, you can always make the messages less than 40 characters long—just get rid of the extra information in the listing if you are writing over it.

### Does the Program Work?

Technically, from a programmer's point of view, if you type the listing correctly, the answer is yes. The program wil run the animation and flash the messages. If you don't think the messages really appear, type this into the listing:

741 FOR T = 1 TO 2000:NEXT T (RETURN)

This will put a time delay between the message and the line that erases it.

From a psychological point of view, however, the answer to the question, to quote the Cheshire Cat, is: "That all depends . . ." We learn largely by repeated "conditioning." We learn to spell by rote; we memorize things by repeating them over and over to ourselves. This technique of *repetition* is used to train us to perform certain activities and is a key factor (or one of them) in learning. Using this program, we are trying to replace an old learned response or habit with a new one, so the more you use it, the better the chances are that it will work for you.

*This program is designed to help you break bad habits like smoking or overeating or initiate self-improvement behavior through the use of subliminal messages.*

There are other techniques, besides repetition, that work to change old habits. *Substitution* is one of them. When we get rid of a habit or idea, we may have the feeling that we are leaving a "hole" in our minds. Often, substituting one behavior for another is a very effective way to relieve this sense of emptiness. In this case, you try to suggest to yourself things you can be doing instead of the habit or unwanted thought process.

Another important technique is *relaxation*. Any therapist will tell you that you will accomplish more psychologically if you are relaxed, and a hypnotist depends on relaxation as a key element to suggestion. The more relaxed you are, the more open you are to suggestion. So if you use this program in an atmosphere of tension, it probably won't work at all. For instance, if you constantly try to second-guess the message display, or run over problems from the day's work in your mind while you watch the program, its effectiveness will be reduced. The best way to relax is to take deep breaths (Don't hyperventilate though!) in a calm, steady rhythm while thinking to yourself "relax . . . relax."

Try to keep wandering thoughts away as you do this. Relaxing is no mystery; nothing strange is going to happen, so you don't have to get excited over the idea of relaxing. Just let tension flow out of you and clear your mind so it can be receptive to new ideas. Some soft music, a quiet atmosphere, soft lights will all help you relax. If you relax so much that you fall asleep, don't worry—you're probably tired, and sleep is just what you need!

You must also have a *desire* to change your behavior if you are to get much out of the program. The mind can be very adept at resisting persuasion, so think carefully before using this program. Your subconscious mind may not feel a need to change—in which case, this program will have no effect. You may target an area that you consciously think needs change, but your subconscious knows better. Consider this often as you use the program. If it begins to annoy you, or you begin to feel bad about using it, that's a good sign that a part of you is blocking the technique. It is up to you to look into your own mind to find out why.

*Belief* is also critical for the program to work. If you convince yourself that this program can't possibly work, don't worry—it won't! Trust and belief are essential to self-improvement techniques. It's fine to question, to wonder, to doubt, but your chances of success are much improved if you believe that the program can work for you. One way to develop that belief is to expect the program to work. Give yourself a chance by keeping an open mind. A closed mind won't allow anything in.

Also, you should maintain *reasonable expectations* from the program. You didn't become the person you are overnight, so don't expect to change overnight. Change takes time (which is one reason why psychological therapy can go on for so long). Repeated viewings of the program can eventually achieve results. There is no such thing as an instant cure, instant profit or instant anything else (except maybe, instant coffee). Human development takes place gradually, at different speeds for different people. If you want instant gratification, you'll have to look somewhere else—this program can't deliver that.

Finally, *practice* what you preach. Support your messages with *action*. If you want to lose weight, the next time you dive for the fridge, stop a moment and think, "Do I really want to do this?" Maybe you really do! If so, go ahead. You don't have to change yourself if you really don't want to. And, finally, if you slip up from time to time (we all do that) and smoke a cigarette or eat a sundae, be gentle with yourself. Progress is a matter of three steps forward and two steps backwards. It may be a slow progress, but in time you will see results.

I make no guarantees concerning this program, other than that it will run if you enter it correctly. There is a lot of controversy over subliminal persuasion techniques, and we have no concrete answers. Some techniques work for some people, others don't. I designed this program to be of interest to you, to offer you an activity you might find useful, and to demonstrate some programming techniques that you might enjoy and be able to adapt to your own computer needs. If you take it at that, you will get something from the exercise in programming, and maybe more. I have had this program for three years, and I have shared it, as both an animation program and a subliminal stimulator. I have never received a negative comment. In fact, one friend sat and watched the animation version of the program for two hours, fascinated. The program is what you make of it. C

**Before typing this program, read "How to Enter Programs."**

### Pygmalion

```
10 M$(1)="THIS-IS-MESSAGE-ONE-WITH---
   40-CHARACTERS"'BFLJ
20 M$(2)="THIS-IS-MESSAGE-TWO-WITH---
   40-CHARACTERS"'BFLK
30 M$(3)="[BLACK]MESSAGE-THREE-ALSO-H
   AS-----40-CHARACTERS"'BFRL
40 M$(4)="[WHITE]MESSAGE-FOUR-HAS-40-
   CHARACTERS-IN-IT-TOO"'BFAM
50 M$(5)="[YELLOW]THIS-IS-MESSAGE-FIV
   E-WITH--40-CHARACTERS"'BFUO
51 :'ABHC
55 REM**********************'BXJK
56 REM** VARIABLE ASSIGNMENTS'BVQN
57 REM**********************'BXJM
58 :'ABHJ
60 BA=53280:SA=53281:REM***** BORDER
   AND SCREEN COLOR ADDRESSES
   *****'DFXR
70 CL=54272:REM*** ADD TO SCREEN POKE
   TO GENERATE CHARACTER COLOR
   ***'CDTS
80 CH=160:REM*** SET SCREEN CHARACTER
   TO REVERSED SPACE ***'CUOR
81 :'ABHF
90 REM**************************'BASJ
100 REM** START OF MAIN PROGRAM'BUQB
105 REM**********************'BYBE
106 :'ABHB
110 GOTO 1000:REM*** GO TO TITLE AND
    INSTRUCTION SCREENS ***'CQSI
120 X=INT(RND(0)*5)+1:REM*** PICK A
    MESSAGE AT RANDOM ***'GKSJ
130 BC=INT(RND(0)*14)+1'FKAD
140 REM*** PICK ANY SCREEN/BORDER
    COLOR BUT BLACK OR GRAY 3 ***'BVVM
150 POKE BA,BC:POKE SA,BC
    :REM** SCREEN/BORDER THE SAME
    COLOR ***'DRYM
160 A=1064:B=A+39:C=B+880
    :D=C-39          'HVKK
170 REM** SET STARTING 4 CORNER
    COORDINATES FOR ANIMATION
    SEQUENCE ***'BEIR
171 :'ABHD
175 REM**********************'BYBL
176 REM** BEGIN ANIMATION LOOPS'BVQO
177 REM**********************'BYBN
178 :'ABHK
180 CR=INT(RND(0)*14)+1
    :REM** PICK CHARACTER COLOR - NOT
    BLACK OR GRAY3 **'GYET
190 FOR L = A TO B'DDPG
200 GOSUB 600'BDJW
210 NEXT L:REM*** PLOT TOP LINE
    COORDINATES AND DRAW THEM ***'CQLJ
220 FOR L= B TO C STEP 40'EFFB
230 GOSUB 600'BDJA
240 NEXT L:REM*** PLOT RIGHT SIDE
    COORDINATES AND DRAW THEM ***'CSWM
250 FOR L= C TO D STEP -1'FEVF
260 GOSUB 600'BDJD
270 NEXT L:REM*** PLOT BOTTOM LINE
    COORDINATES AND DRAW THEM ***'CTGQ
280 FOR L= D TO A STEP -40'FFUI
290 GOSUB 600'BDJG
300 NEXT L:REM*** PLOT LEFT SIDE
    COORDINATES AND DRAW THEM ***'CROJ
310 IF FL=1 THEN 1050:REM*** IF FLAG,
     GO TO INSTRUCTION SCREENS
    ***'ESFL
320 A=A+41:B=B+39:C=C-41:D=D-39
    :REM*** REDUCE RECTANGLE SIZE BY
    ONE ***'JAJR
330 IF L = 1475 THEN GOSUB 700
    :GOTO 120'FMWF
340 REM*** IF SCREEN IS FULL PRINT
    MESSAGE--THEN RESTART SEQUENCE
    ***'BDPQ
350 GOTO 180:REM** IF SCREEN IS NOT
    FULL PICK NEW COLOR AND DRAW
    **'CTAP
352 REM** A NEW, SMALLER RECTANGLE
    **'BAAL
353 :'ABHF
600 REM**************************'BASE
601 REM**PRINT TO SCREEN ROUTINE'BWXH
602 REM**************************'BASG
603 :'ABHD
610 FOR T=1 TO DE:NEXT T
    :REM** DELAY LOOP TO SET SPEED OF
    ANIMATION ***'FRJP
620 POKE L,CH:POKE L+CL,CR'DLBG
630 REM*** POKE CHARACTER TO SCREEN
    IN COLOR CHOSEN BY RND FUNCTION
    **'BCIS
```

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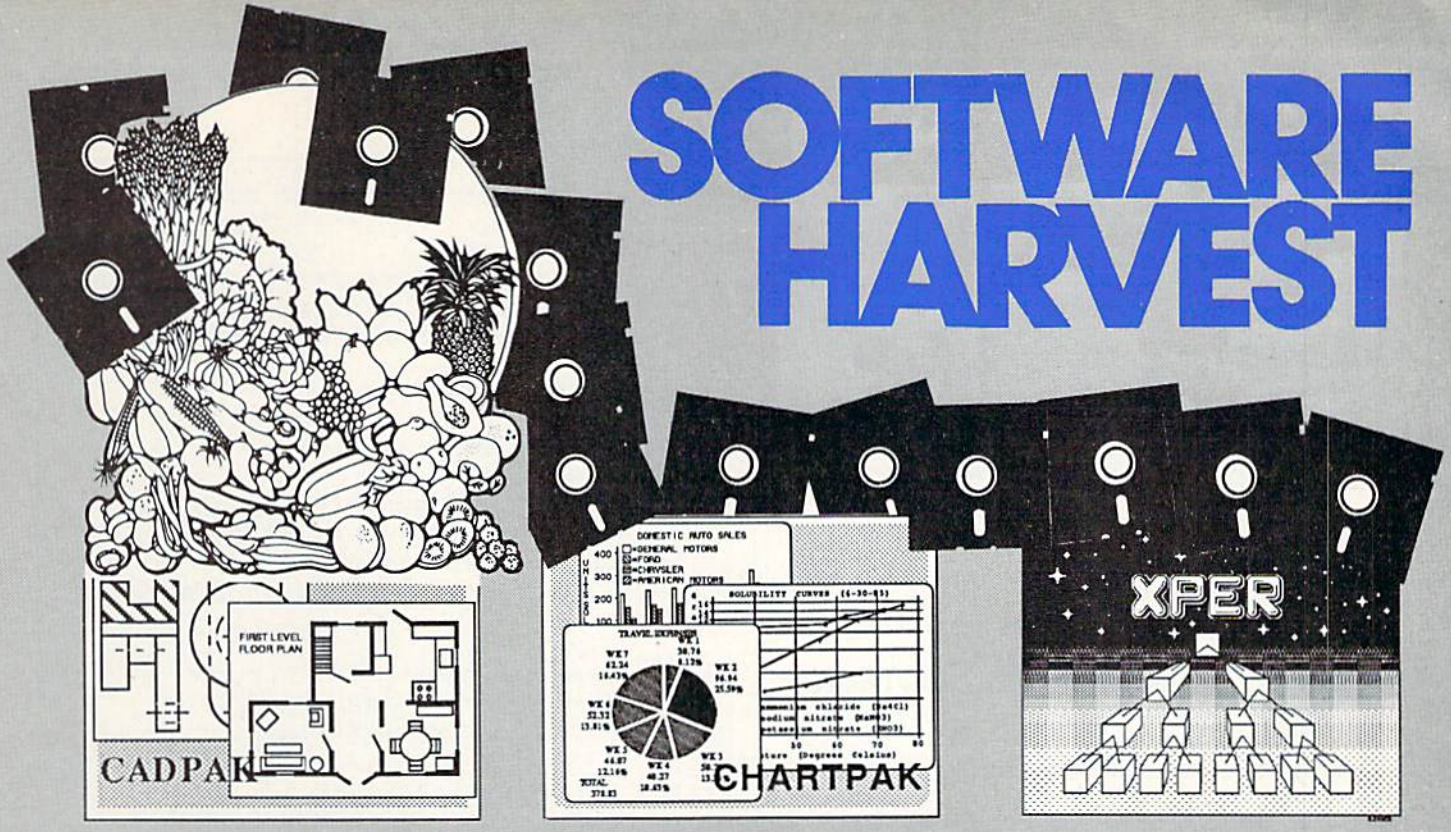


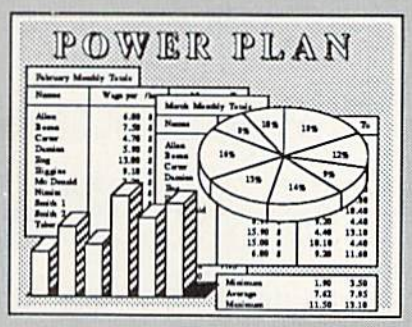


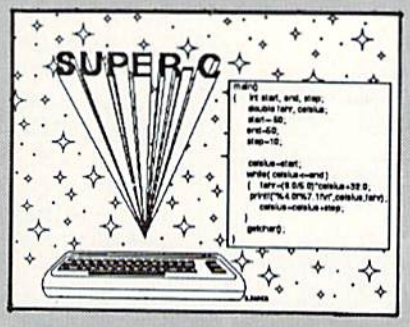


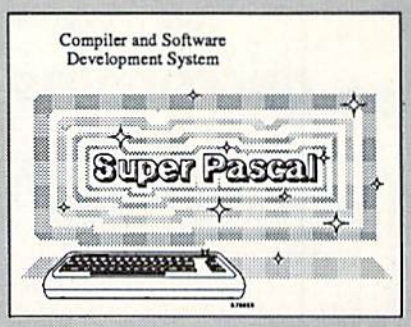


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# 64 USERS ONLY

```
640 RETURN:REM*** GO BACK FOR NEXT
    SCREEN LOCATION ***'CJGO
641 :'ABHF
700 REM*************************'BBKF
701 REM* MESSAGE PRINTING ROUTINE'BXDJ
702 REM*************************'BBKH
703 :'ABHE
740 PRINT"[HOME]";M$(X)
    :REM*** PRINT MESSAGE ON TOP
    SCREEN LINE ***'CPHQ
741 :'ABHG
750 PRINT"[HOME,SPACE40]"'BAVL
760 REM*** PRINT 40 SPACES TO WIPE
    OUT MESSAGE ***'BKQR
770 RETURN:REM** GO BACK TO LINE 330
    **'CUHO
791 :'ABHL
1000 REM***************'BPFV
1005 REM** TITLE SCREEN'BNLC
1006 REM***************'BPFC
1007 :'ABHA
1010 POKE BA,11:POKE SA,12
     :REM***** SET SCREEN/BORDER TO
     SHADES OF GRAY **'DYUI
1020 FL=1:REM*** SET FLAG FOR
     ANIMATION TO OBEY ***'CKCF
1030 PRINT"[CLEAR,BLACK,DOWN10,
     RIGHT15]PYGMALEON";'BBLD
1035 PRINT"[DOWN,LEFT5]BY[DOWN2,LEFT7]
     TIM THOMPSON"'BASN
1040 GOTO 160:REM***** PRINT TITLE
     SCREEN AND DRAW BORDER *****'CSBJ
1050 FL=0:REM*** RELEASE FLAG ***'CVIE
1060 FOR T=1 TO 880:NEXT T
     :REM***** WAIT ONE SECOND
     *****'FGAJ
1070 FOR M=1 TO 10:PRINT:NEXT M
     :REM***** SCROLL SCREEN AWAY
     ******'GKIL
1071 :'ABHB
1073 REM************************'BYBH
1074 REM** INSTRUCTION SCREEN #1'BVNK
1075 REM************************'BYBJ
1076 :'ABHG
1080 PRINT"THIS PROGRAM WILL DRAW A
     SERIES OF";'BBHL
1085 PRINT"[RIGHT6]CONCENTRIC
     RECTANGLES IN ";'BBTO
1090 PRINT"DIFFERENT":PRINT"COLORS,
      EACH ONE BEING SMALLER THAN
     THE"'CBTQ
1095 PRINT"ONE BEFORE IT,
      UNTIL THE ENTIRE SCREEN"
     :PRINT"IS FILLED."'CBOV
1100 PRINT:PRINT"WHEN THAT HAPPENS,
      THE SCREEN AND BORDER";'CCNG
1110 PRINT"WILL CHANGE COLOR AND THE
     SEQUENCE WILL"'BACG
1120 PRINT"BEGIN AGAIN.":PRINT
     :PRINT"EACH TIME A RECTANGLE IS
     COMPLETE,"'DCFK
1130 PRINT"THE COMPUTER PICKS A NEW
     COLOR FOR THE"'BALH
```

## 64 USERS ONLY

```
1140 PRINT"NEXT RECTANGLE. THIS NEW
     COLOR MIGHT BE"'BADJ
1150 PRINT"THE SAME AS THE OLD COLOR,
      OR IT COULD"'BANJ
1160 PRINT"BE DIFFERENT...ONLY THE
     COMPUTER KNOWS!"'BAOL
1170 PRINT"TWO RECTANGLES OF THE SAME
     COLOR WILL"'BAWL
1180 PRINT"APPEAR TWICE AS WIDE AS
     THE OTHERS."'BAXL
1190 PRINT:PRINT"THUS, WHAT YOU SEE
     IS NEVER THE SAME."'CBGO
1200 PRINT:PRINT"[RIGHT6,RVS]
     PRESS ANY KEY FOR NEXT PAGE
     [DOWN3]"'CBGE
1210 GET K$:IF K$=""THEN 1210
     :REM** WAIT FOR ANY KEY TO BE
     PRESSED **'FNEI
1211 :'ABHW
1214 REM************************'BYBE
1215 REM** INSTRUCTION SCREEN #2'BVOH
1216 REM************************'BYBG
1217 :'ABHD
1220 PRINT:PRINT:PRINT"THIS CAN BE
     VERY RELAXING."'DCBG
1230 PRINT:PRINT"WHILE YOU WATCH THIS
     ANIMATION, FOLLOW"'CBPJ
1240 PRINT"THE PATTERN WITH YOUR
     EYES."'BAEH
1250 PRINT:PRINT"BREATHE DEEPLY AND
     LET THE SMOOTH MOTION";'CCSM
1260 PRINT"HELP YOU ACHIEVE A FEELING
     OF PEACE AND"'BAFL
1270 PRINT"CALM.[SPACE2]
     LET GO OF TENSION AND
     STRESS."'BAUL
1280 PRINT:PRINT"PERHAPS,
      YOU MIGHT LIKE TO LISTEN
     TO"'CBGO
1290 PRINT"SOME SOFT MUSIC AS YOU
     WATCH."'BATM
1300 PRINT:PRINT"IF YOU DO LISTEN TO
     MUSIC, PLAY"'CBJF
1310 PRINT"SOMETHING SOOTHING THAT
     HELPS YOU RELAX."'BAAI
1320 PRINT"AS YOU WATCH,
      THE COMPUTER WILL FLASH"'BALI
1330 PRINT"SPECIAL MESSAGES FOR YOU.
     [SPACE2]DON'T TRY TO"'BACK
1340 PRINT"READ THEM, JUST SIT BACK
     AND WATCH."'BAUJ
1350 PRINT:PRINT"LET THE COMPUTER
     WORK FOR YOU AS YOU"'CBKM
1360 PRINT"RELAX AND ENJOY ALL THE
     PATTERNS AND"'BAWM
1370 PRINT"COLORS IT PRODUCES."'BAKI
1380 PRINT:PRINT"[RIGHT6,RVS]
     PRESS ANY KEY FOR NEXT PAGE"'CBFN
1390 GET K$:IF K$=""THEN 1390
     :REM** WAIT FOR ANY KEY TO BE
     PRESSED **'FNIS
1391 :'ABHG
1392 REM************************'BYBL
```


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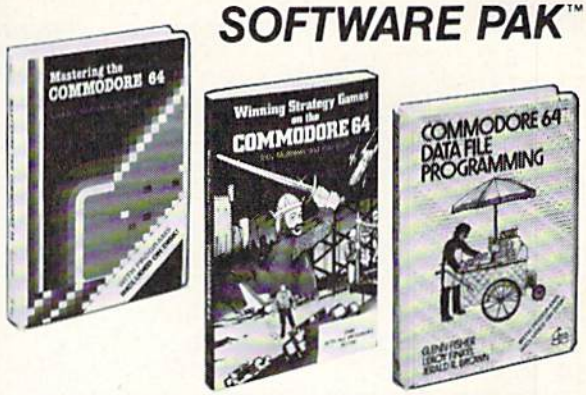


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```
1394 REM** INSTRUCTION SCREEN #3'BVPP
1395 REM************************'BYBO
1396 :'ABHL
1400 PRINT:PRINT:PRINT"BEFORE WE
     BEGIN, THE COMPUTER NEEDS
     TO"'DCVJ
1410 PRINT"GET AN IDEA OF WHAT
     ANIMATION SPEED IS"'BASI
1420 PRINT"IS MOST RELAXING FOR
     YOU."'BAUG
1430 PRINT:PRINT"AT THE PROMPT,
      YOU MAY ENTER A NUMBER"'CBOL
1440 PRINT"BETWEEN 1 AND 10."'BANF
1445 PRINT:PRINT"[RIGHT3]
     1 - WILL MAKE THE ANIMATION
     FAST."'CBVQ
1450 PRINT:PRINT"[RIGHT2]
     10 - WILL MAKE THE ANIMATION
     SLOWER."'CBRM
1460 PRINT:PRINT"EXPERIMENT WITH
     DIFFERENT SPEEDS EACH"'CBGO
1470 PRINT"TIME YOU WATCH THIS
     PROGRAM."'BAGM
1480 PRINT:PRINT"REMEMBER,
      YOU CAN ALWAYS STOP BY"'CBJP
1490 PRINT"PRESSING THE [RVS]RUN/STOP
     [RVOFF] KEY."'BAEO
1500 PRINT:PRINT"WE ARE READY TO
     BEGIN.[SPACE2]THE COMPUTER"'CBPI
1510 PRINT"WILL START TO DRAW AS SOON
     AS YOU ENTER"'BAXK
1520 PRINT"A NUMBER AND PRESS [RVS]
     RETURN[RVOFF]."'BAAI
1530 PRINT"[DOWN2]":PRINT"[UP2]"
     :INPUT"ANIMATION SPEED";DE'DFPJ
1532 REM** GET SPEED FROM USER AND
     STORE IN DELAY VARIABLE **'BSQP
1540 FOR B= 1 TO 24:PRINT:NEXT B
     :REM** SCROLL SCREEN AWAY **'GDDM
1550 PRINT"[GRAY2]":GOTO 120
     :REM** MAKE MESSAGE COLOR GRAY 2
     AND START **'DNVP
1561 REM*ANY COLOR IMBEDDED IN A
     MESSAGE WILL NOT AFFECT THE
     ANIMATION COLOR *'BINW
1563 REM*MESSAGE COLOR WILL OVERRIDE
     THE 'GRAY 2' COLOR COMMAND IN
     1550 *'BEOW
1564 :'ABHI
1565 REM************************'BYBN
1566 REM** TO RUN THIS PROGRAM
     EFFECTIVELY, DELETE ALL 'REM'
     STATEMENTS **'BGUB
1567 REM** AND REMOVE THE NUMBERED
     :'  STATEMENTS **'BMEV
1568 REM** THESE ARE PUT HERE FOR
     CLARITY, NOT FUNCTION **'BQNY
1570 REM************************'BYBJ
```

END


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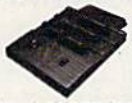

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# Com 64 Grapher

*Design the format for a vertical bar graph, enter up to 60 numbers, and display the results on four screens of 15 bar graphs each.*

Com 64 Grapher allows you to design the format of a vertical bar graph, enter up to 60 numbers, and display the results on four screens of 15 bar graphs each.

Various editing options are available: Start a New Bar Graph, Read File from Disk, Write File to Disk, Add to Existing Data, Change Prior Entry, Format Change, List Current Data and Graph Data. These options are accessed by pressing the first letter of the option, which is shown in reverse video.

The Start a New File option sets the parameters of the graph: the name, value of the bottom axis, value of the five vertical intervals, and finally, the name of the bottom axis. The two numerical values will determine the range of your graph (the value of the bottom axis plus five times the vertical interval).

You will now be asked if you want the bars in the same or different colors. The mono-color graphs will be red on black and the multi-color graphs are ten different colors. The next prompt will ask you to enter the graph values. If a number is outside the graphing range (as determined by the format parameters), you will be prompted with a bad entry statement and it will be refused. Otherwise, your entry will be accepted and you will be asked for the next. To leave the entry mode, enter "-1" and you will be returned to the menu. You can display your graph by pressing "G."

The Read a File From Disk option is for when you have previously written a file to disk and you want to recall it for display or modification. You will be asked for the name of the file, so be sure to input the same name that you entered to start the file.

The Write a File to Disk option uses the name of the file in memory and records it. In this way, files are overwritten so old files are constantly updated.

The Add to Existing File option picks up the number of highest bars in memory and lets you continue to add data to the file. To quit the option, again enter "−1."

To Change a Prior Entry, you will be asked what entry number you wish to change,and prompted with the current value, then asked to enter the new one. The same routine applies for the color number. If you do not wish to change color, enter the same number. This option gives you an opportunity to emphasize a special bar in a mono-colored graph by making it a different color. Don't forget to rewrite the file to disk if you want to retain the new entry.

The Format Change option is for when you have exceeded the range of your graph format. This option lets you change the value of the bottom axis of the graph format, the vertical interval, or both.

The List Current Data option makes a screen listing of the file data. It will then list the high and low value and calculate the average value.

The Graph Data option displays the four screens of 15 bar graphs each in either monochrome or multi-color. See the Commodore 64 user guide for color numbers. When a bar graph screen is displayed, it may be printed by pressing the "P" key.

The program has one interesting subroutine that you may find useful in your own programs. Lines 790-810 form a cursor-positioning subroutine that is used frequently. "CO" represents the column number (zero through 39) and "RO" represents the row number (zero through 24).

Line 20 gives an example of its use. Simply give the value of the column and the row to start printing. GOSUB the subroutine, and follow with a print or an input statement. The first letter of your entry will be at the position specified.

Beginning at Line 950, the program has an input subroutine that will accept only numbers. However, when an alpha-numeric is required, it will accept any key except colons, commas, and the cursor movement keys. C

Before typing this program, read "How to Enter Programs."

### Com 64 Grapher

```
10 DIM G(60),C(60):Z=0:X=0'DRWC
15 POKE 53280,6:POKE 53281,3
   :PRINT CHR$(147):POKE 646,0'FCEK
20 CO=7:RO=4:GOSUB 790:PRINT"*** COM
   64 GRAPHER MENU ***"'EMYJ
25 PRINT:PRINT:PRINT TAB(11)CHR$(18)
   "S"CHR$(146)"TART NEW GRAPH
   FILE"'GOCP
30 PRINT:PRINT TAB(11)CHR$(18)"R"CHR$
   (146)"EAD FILE FROM DISC"'FNIJ
35 PRINT:PRINT TAB(11)CHR$(18)"W"CHR$
   (146)"RITE FILE TO DISC"'FNXO
40 PRINT:PRINT TAB(11)CHR$(18)"A"CHR$
   (146)"DD TO PRIOR DATA"'FNCK
45 PRINT:PRINT TAB(11)CHR$(18)"C"CHR$
   (146)"HANGE PRIOR ENTRY"'FNAP
50 PRINT:PRINT TAB(11)CHR$(18)"F"CHR$
   (146)"ORMAT CHANGE"'FNEK
55 PRINT:PRINT TAB(11)CHR$(18)"L"CHR$
   (146)"IST CURRENT DATA"'FNYQ
60 PRINT:PRINT TAB(11)CHR$(18)"G"CHR$
   (146)"RAPH DATA"'FNFK
65 GET A$:IF A$=""THEN 65'EHSK
70 IF A$="S"THEN Z=0:CC=1
   :GOTO 115'GMTJ
75 IF A$="R"THEN GOSUB 520
   :GOTO 15'FIHM
80 IF A$="A"THEN PRINT CHR$(147):N=E
   :CC=C(N-1)+1:GOTO 176'KXTP
85 IF A$="W"THEN GOSUB 445
   :GOTO 15'FISN
90 IF A$="L"THEN GOSUB 615:ZZ=E-1
   :GOTO 15'HNSM
```

```
95 IF A$="C"THEN 705'DFPN
100 IF A$="G"THEN 245'DFSX
105 IF A$="F"THEN GOSUB 755
    :GOTO 15'FIFE
110 GOTO 15'BCNV
115 IF X>0 THEN 65'DEND
120 PRINT CHR$(147):CO=2:RO=1
    :GOSUB 790'FRIE
122 PRINT"NAME OF GRAPH: ";:GOSUB 950
    :T$=B$'DKIG
125 PRINT:PRINT TAB(2)"VALUE OF
    BOTTOM AXIS: ";:U=1:GOSUB 950
    :B=VAL(B$)'HROQ
130 PRINT:PRINT TAB(2)"VALUE OF
    VERTICAL INTERVAL: ";:U=1
    :GOSUB 950'FLFL
132 S=VAL(B$)'CFDC
135 PRINT:PRINT TAB(2)"NAME OF BOTTOM
    AXIS: ";:GOSUB 950:X$=B$'FNXO
140 PRINT:PRINT TAB(2)CHR$(156)"ALL
    BARS THE SAME COLOR[SPACE2]
    - PRESS 'A'"'EIKM
145 PRINT:PRINT TAB(2)"DIFFERENT
    COLORED BARS[SPACE3]
    - PRESS 'B'"'DDTP
150 GET A$:IF A$=""THEN 150'EIFE
155 IF A$="A"THEN Z=1:FOR V=1 TO 60
    :C(V)=2:NEXT:GOTO 170'KUDP
160 IF A$="B"THEN 170'DFKE
165 GOTO 150'BDFH
170 N=1:PRINT:PRINT TAB(2)CHR$(30)
    "INPUT UP TO 60 VALUES"'FKNM
175 PRINT:PRINT TAB(2)"TYPE '-1' TO
    END INPUT"'DDSO
176 CO=2:RO=17:GOSUB 790'DMJM
178 PRINT CHR$(28)"RANGE OF GRAPH
    IS"B"TO"B+5*S;CHR$(144)'FOOV
180 CO=2:RO=20:GOSUB 790'DMDH
182 PRINT"VALUE TO BE GRAPHED,BAR #";
    N;"[SPACE13]";'BEVO
185 CO=32:RO=20:GOSUB 790:U=1
    :GOSUB 950:G(N)=VAL(B$)'HEKT
190 GN=G(N)'BGTG
192 IF GN<>-1 AND GN<B OR GN>B+5*S
    THEN CO=2:RO=20:GOSUB 790
    :GOSUB 780:GOTO 180'QGVX
195 IF GN=-1 THEN W=0:E=N:GOTO 15'HLDQ
200 IF Z=1 THEN C(N)=2'EHCA
205 IF Z=1 AND N=60 THEN W=0
    :GOTO 15'HKEH
210 IF GN<B OR GN>B+5*S THEN 180'HLGE
215 IF Z=1 THEN N=N+1:GOTO 180'GJSH
220 IF CC=11 THEN CC=1'EHCC
225 C(N)=CC'BGAF
230 CC=CC+1'CFCB
235 IF N=60 THEN 15'DFDG
240 N=N+1:GOTO 180'DHHD
245 W=0:POKE 53280,0:POKE 53281,0
    :POKE 646,5'EYFM
250 PRINT CHR$(147)TAB(8+(32-INT(LEN
    (T$)))/2)T$'IUSK
255 FOR P=1 TO 20:CO=1:RO=P
    :GOSUB 790'GQWN
260 PRINT TAB(7)"[CMDR H,SPACE30,
    CMDR M]":NEXT'DDQJ
265 CO=1:RO=21:GOSUB 790
    :PRINT B;TAB(7)"[SHFT L,CMDR P30,
    SHFT @]"'FRUL
270 FOR P=1 TO 4:CO=1:RO=21-4*P
    :GOSUB 790'ISIM
275 PRINT B+P*S;TAB(7)"[SHFT L,
    CMDR P30,SHFT @]"'EGHJ
280 NEXT'BAEE
285 CO=1:RO=1:GOSUB 790'DLDN
290 PRINT B+5*S;TAB(7)"[CMDR P32]
    "'EGVF
295 IF W<>0 THEN 305'EFFN
300 X=1'BCIX
305 IF G(X)=-1 THEN C(X)=2
    :GOTO 355'GOXI
310 Y=INT(4*(G(X)-B)/S)'FMFE
315 LS=1871:LC=56143'COJH
320 FOR R=0 TO(Y-1):POKE
    LS+2*(X-15*W)-40*R,160
    :POKE LC+2*(X-15*W)-40*R,C(X)'SQUU
325 NEXT R'BBLE
330 IF X=15 THEN 355'DGMD
335 IF X=30 THEN 355'DGJI
340 IF X=45 THEN 355'DGPE
345 IF X=60 THEN 355'DGMJ
350 X=X+1:GOTO 305'DHBF
355 CO=(40-LEN(X$))/2:RO=23:GOSUB 790
    :PRINT X$;'HYUQ
360 IF W<>0 THEN GOSUB 415
    :GOTO 375'GJPI
365 CO=9:ROW=22:GOSUB 790
    :PRINT"1 2 3 4 5 6 7 8 9 1 1 1 1
    1 1";'EPMT
370 CO=27:RO=23:GOSUB 790
    :PRINT"0 1 2 3 4 5";
    :PRINT CHR$(158);'GWWO
375 CO=0:RO=24:GOSUB 790:PRINT"PRESS
    :'P' TO PRINT[SPACE2]-[SPACE2]
    ANY KEY TO GO ON";'EOLY
380 GET A$:IF A$=""THEN 380'EIKJ
385 IF A$="P"THEN GOSUB 815'EFVN
390 IF X=15 AND X<E-1 THEN W=1:X=X+1
    :POKE 646,5:GOTO 250'LWOS
395 IF X=30 AND X<E-1 THEN W=2:X=X+1
    :POKE 646,5:GOTO 250'LWMX
400 IF X=45 AND X<E-1 THEN W=3:X=X+1
    :POKE 646,5:GOTO 250'LWTK
405 IF X=15 OR X=30 OR X=45 AND X=E-1
    THEN 15'KOIN
410 GOTO 15'BCNY
415 IF W=1 THEN CO=9:RO=22:GOSUB 790
    :PRINT"1 1 1 1 2 2 2 2 2 2 2 2 2
    2 3"'HPFQ
420 IF W=1 THEN PRINT TAB(9)"6 7 8 9
    0 1 2 3 4 5 6 7 8 9 0";'FFVJ
422 IF W=1 THEN PRINT CHR$(158);
    :RETURN'GJOH
425 IF W=2 THEN CO=9:RO=22:GOSUB 790
    :PRINT"3 3 3 3 3 3 3 3 3 4 4 4 4
    4 4"'HPFR
430 IF W=2 THEN PRINT TAB(9)"1 2 3 4
```

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```
    5 6 7 8 9 0 1 2 3 4 5";'FFHK
432 IF W=2 THEN PRINT CHR$(158);
    :RETURN'GJPI
435 IF W=3 THEN CO=9:RO=22:GOSUB 790
    :PRINT"4 4 4 4 5 5 5 5 5 5 5 5 5
    5 6"'HPCS
440 IF W=3 THEN PRINT TAB(9)"6 7 8 9
    0 1 2 3 4 5 6 7 8 9 0";'FFXL
442 IF W=3 THEN PRINT CHR$(158);
    :RETURN'GJQJ
445 REM-WRITE TO DISC'BMNL
450 PRINT CHR$(147);"THE GRAPH BEING
    RECORDED IS TITLED":PRINT
    :PRINT T$'EKVQ
455 OPEN 2,8,2,"@0:"+T$+",S,W"'DILN
460 PRINT#2,Z'BDEF
465 PRINT#2,B'BDFK
470 PRINT#2,S'BDWG
475 PRINT#2,T$'BEJL
480 PRINT#2,X$'BENH
485 PRINT#2,E'BDIM
490 FOR I=1 TO E'DDYJ
495 PRINT#2,G(I)'BGON
500 PRINT#2,C(I)'BGKA
505 NEXT'BAEE
510 CLOSE 2'BBJA
515 RETURN'BAQF
520 REM-READ FROM TAPE'BNDF
525 PRINT CHR$(147)'CFBI
530 INPUT"GRAPH TITLE";T$'BDKG
535 OPEN 2,8,2,"0:"+T$+",S,R"'DIWL
540 OPEN 15,8,15:INPUT#15,E,ER$,B1,C
    :IF E<20 THEN 555'FDIL
545 PRINT"[DOWN]FILE NOT FOUND. TRY
    AGAIN!":FOR T=1 TO 2000:NEXT
    :CLOSE 2:CLOSE 15'HNRV
550 GOTO 530'BDHF
555 INPUT#2,Z'BDJK
560 INPUT#2,B'BDKG
565 INPUT#2,S'BDCL
570 INPUT#2,T$'BEOH
575 INPUT#2,X$'BESM
580 INPUT#2,E'BDNI
585 FOR I=1 TO E'DDYO
590 INPUT#2,G(I)'BGTJ
595 INPUT#2,C(I)'BGPO
600 NEXT'BAEA
605 CLOSE 2:CLOSE 15'CESH
610 RETURN'BAQB
615 H=0:REM-LIST CURRENT DATA'CTCM
620 PRINT CHR$(147):PRINT
    TAB(20-INT(LEN(T$)/2))T$'ISAK
625 IF H=1 THEN H=0:NEXT'FFQL
630 TT=0:LL=99999999:HH=.000000001'DC
    XL
635 FOR I=1 TO E-1:TT=TT+G(I)
    :IF G(I)<LL THEN LL=G(I)'KBBU
640 IF G(I)>HH THEN HH=G(I)'EMSJ
645 PRINT TAB(2)X$;I;TAB(30-LEN(STR$
    (INT(G(I)))))G(I)'HYGS
650 IF I=15 OR I=30 OR I=45 THEN H=1
    :FF=0:GOTO 680'KTHP
655 NEXT'BAEK
```

```
660 PRINT:PRINT"END OF FILE"'CBOK
665 PRINT:PRINT"HIGH VALUE WAS[SPACE2]
    "HH'CDQR
670 PRINT"LOW VALUE WAS[SPACE3]
    "LL'BCDM
675 PRINT"AVERAGE VALUE=[SPACE2]";
    INT((100*TT/(E-1))+.5)/100
    :FF=1'IXSB
680 CO=12:RO=24:GOSUB 790
    :PRINT"PRESS ANY KEY";'EPIR
685 GET A$:IF A$=""THEN 685'EISR
690 IF FF=1 THEN 15'DFHM
695 IF I=Z AND I=15 OR I=Z AND I=30
    OR I=Z AND I=45 THEN CO=0:RO=16
    :GOSUB 790:GOTO 660'RGNH
700 GOTO 620'BDHC
705 REM-CHANGE PRIOR ENTRY'BRCL
710 PRINT CHR$(147):PRINT'DGGF
715 PRINT TAB(2)"WHICH ENTRY #
    :[SPACE2]";:U=1:GOSUB 950
    :D=VAL(B$)'GQQS
720 PRINT:PRINT TAB(2)"ENTRY # ";D;
    " IS NOW"G(D)'DKHK
725 PRINT:PRINT TAB(2)"ENTER NEW VALUE
    :[SPACE2]";:U=1:GOSUB 950
    :G(D)=VAL(B$)'HUIV
730 PRINT:PRINT TAB(2)"ENTRY #"D"IS
    NOW"G(D)'DIAL
735 PRINT:PRINT TAB(2)"COLOR IS NOW
    KEY #"C(D)'DHJQ
740 PRINT:PRINT TAB(2)"ENTER NEW
    COLOR KEY #:[SPACE2]";:U=1
    :GOSUB 950:C(D)=VAL(B$)'HULT
745 FOR T=1 TO 1000:NEXT:X=1'FKCP
750 GOTO 15'BCNG
755 REM FORMAT CHANGE'BMDO
760 PRINT CHR$(147):CO=2:RO=6
    :GOSUB 790'FRNO
762 PRINT TAB(2)"VALUE OF BOTTOM AXIS
    IS ";B'CEBR
765 PRINT:PRINT TAB(2)"ENTER NEW VALUE
    :[SPACE2]";:U=1:GOSUB 950
    :B=VAL(B$)'HRKY
770 PRINT:PRINT TAB(2)"VALUE OF
    VERTICAL INTERVAL IS ";S'DFET
775 PRINT:PRINT TAB(2)"ENTER NEW VALUE
    :[SPACE2]";:U=1:GOSUB 950
    :S=VAL(B$):RETURN'ISVB
780 PRINT"[SPACE39]"'BAUO
785 CO=2:RO=20:GOSUB 790
    :PRINT"BAD ENTRY":FOR T=1 TO 1000
    :NEXT:RETURN'JWAB
790 REM CURSOR POSITIONING
    SUB-ROUTINE'BDCS
795 PRINT CHR$(19)'CEBR
800 IF RO<>0 THEN POKE 214,RO-1
    :PRINT'HLRJ
805 POKE 211,CO'BGHI
810 RETURN'BAQD
815 REM SCREEN COPY'BKML
820 SI$=CHR$(15):BS$=CHR$(8)
    :PO$=CHR$(16)'GWTN
825 RV$=CHR$(18):RO$=CHR$(146)
```


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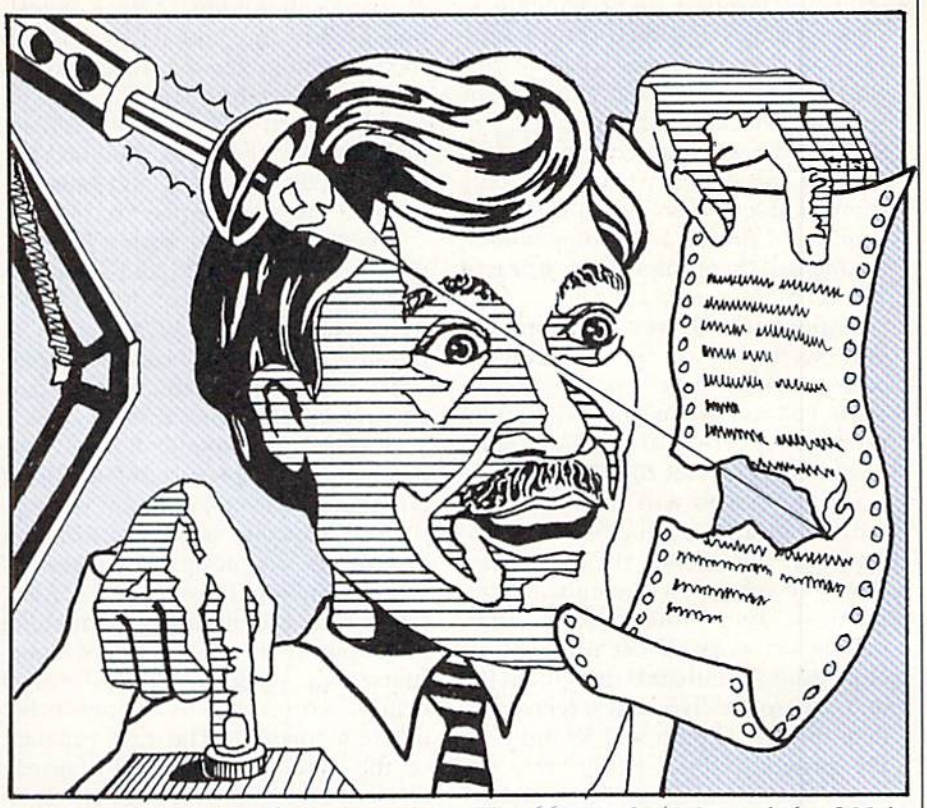
# 64 USERS ONLY

```
    :QT$=CHR$(34)'GYAS
830 MF$=CHR$(145):VR=PEEK(648)
    *256'FTWM
835 OPEN 4,4:PRINT#4'CFGM
840 FOR CL=0 TO 23:QF=0:AS$=MF$
    :FOR RO=0 TO 39'IWLQ
845 SC=PEEK(VR+40*CL+RO)'FMAR
850 IF SC=34 THEN QF=1-QF'FJGM
855 IF SC<>162 THEN 870'EIYQ
860 QF=1-QF:IF QF=1 THEN
    AS$=AS$+RV$+QT$:GOTO 900'JAJU
865 AS$=AS$+QT$+RO$:GOTO 900'EQUT
870 IF QF=1 AND(SC>=128)THEN SC=SC-128
    :GOTO 880'JVXT
875 IF SC>128 THEN SC=SC-128:RF=1
    :AS$=AS$+RV$'IBPA
880 IF SC<32 OR SC>95 THEN AS=SC+64
    :GOTO 895'ISHT
885 IF SC>31 AND SC<64 THEN AS=SC
    :GOTO 895'HQGX
890 IF SC>63 AND SC<96 THEN AS=SC+32
    :GOTO 895'ISGU
895 AS$=AS$+CHR$(AS)'DKTU
900 IF RF=1 THEN AS$=AS$+RO$:RF=0'GQQK
905 NEXT RO'BCJJ
910 IF QF=0 THEN PRINT#4,
    SI$PO$"20"AS$BS$:GOTO 920'FVNM
915 PRINT#4,SI$+PO$+"20"+AS$+QT$BS$'F
    RRQ
920 NEXT CL:PRINT#4,SI$:CLOSE 4
    :RETURN'ELQJ
950 REM INPUT SUBROUTINE'BPVN
955 CB=0:Q=18:B$="":A$=""'ENAS
960 GET A$:IF A$=CHR$(13)THEN 975'FMTO
965 Q=164-Q'CFDQ
970 PRINT CHR$(Q)CHR$(32)CHR$(146)
    CHR$(157);'FSIR
975 IF B$=""AND A$=CHR$(13)THEN 960
    :REM PREVENTS ENTERING NULL'HHCD
980 IF B$=""AND A$=CHR$(20)THEN 960
    :REM NO DELETE IF NO LETTERS ARE
    PRESENT'HQMB
985 IF A$=CHR$(17)OR A$=CHR$(29)OR
    A$=CHR$(145)OR A$=CHR$(157)THEN
    960'NEQF
990 IF A$=":"OR A$=","OR
    A$>CHR$(127)OR A$=CHR$(19)THEN
    960'LUPX
995 IF A$=CHR$(13)THEN PRINT CHR$(32)
    :U=0:RETURN'IOUA
1000 IF U=1 THEN 1024'DGXV
1005 PRINT A$;:B$=B$+A$'DKAC
1010 L=LEN(B$)'CFTV
1015 IF A$=CHR$(20)THEN B$=LEFT$(B$,
     L-2)'HPYG
1020 GOTO 960'BDOV
1024 IF A$=""THEN 960'DFGB
1025 IF A$=CHR$(13)AND B$<>""THEN
     PRINT CHR$(32):U=0:RETURN'LQPK
1030 IF A$<>CHR$(20)AND ASC(A$)<45 OR
     ASC(A$)>57 OR A$>CHR$(127)THEN
     960'ODCL
1035 GOTO 1005'BEDC                    END
```

BY JIM GRACELY

# Tech Notes

*Technical editor Jim Gracely keeps you abreast of the latest and greatest.*



Ergo Systems out of Hayward, California, has a really nice **dot matrix graphic printer** called the **Hush 80.** The "hush" comes from the noise the printer *doesn't* make as it prints, and the 80 from the fact that it uses 80 columns. Though it is a thermal printer, the paper (available from Ergo) is of very good quality. The printer connects to the 64 (or VIC 20, Plus/4, or C-16) with a standard serial port cable (no interface required). I give this printer high marks overall. Ergo has been selling the printer, with one roll of paper and two additional rolls, for $149.

A second printer, the **Riteman C+**, has crossed my desk from Inforunner of Inglewood, California. This printer is also a direct serial connect. It is a space-age printer with front-loading tractor/friction feed and base supports to keep it about four inches above the table so you can store your paper underneath. The front-load design is combined with the dot matrix head pointing down onto the paper, allowing everything up to a card stock to be used. The speed of the printer is adequate until it hits a reverse character (one pass per reverse character on a line).

The third printer I had a chance to look at is a **daisy wheel model** called the **Elite 5 CD** from Axiom of San Fernando, California. This printer provides a wide range of compatibility with both a direct connect serial cable and a Centronics parallel port. The print speed is a usual ten characters per second, but it has several special features. The secondary address (generally either zero or seven on Commodore printers) can be any value from zero through ten with modes that allow control characters to be printed as mnemonics or ignored entirely, line feeds or no line feeds, and a single mode that prints only the hex values of all characters output. Although the version I looked at was friction-feed, it did have the necessary gears to indicate that a tractor feed is or will be available. Retail price on this printer is in the $289 range, and Axiom told me it was backed by a 90-day "no hassle" warranty, in addition to a standard one-year factory warranty.

With the Commodore 128 using both composite (40-column) and RGB (80-column) outputs, the market is going to start filling with **composite/RGB switchable monitors.** The first two I had a chance to see were a 13- and 25-inch from Sanyo. The 13-inch monitor is called the DMC 6600 and provides a nice resolution in both modes. The 25-inch is called the AVM-255 and is really a super monitor (I have one sitting on my desk). Whether you want to use it for watching movies on your VCR or for 80-column word processing, 25 inches is a lot of viewing area. The 25-inch monitor also handles stereo input with an internal amplifier and a pair of speaker jacks (sorry, no speakers included). Both monitors do require you to construct a special cable to use the RGB input, but instructions and the monitor connector are included. The 6600 is $349.95 and the 255 is $799.95.

A new marriage of the **program-of-the-month club** and **electronic magazines** has resulted in a product called the **Gold Disk Series** from Gold Disk, Inc. of Mississauga, Ontario, Canada. The service provides a single, commercial quality program each month along with complete documentation. In addition, there are a couple of nice game programs and a whole slew of regular features, including sound effects, puzzles, reviews and music. At the annual subscription rate of $99.95, each month's disk costs just a little over $8.00.

I had a chance to go through the first disk of the series, and it certainly was worth $8.00. In fact, compared to some of the other products on the market, it was worth a couple of times that amount. The feature program was a full-featured data base, and both of the games included were written in machine language with full arcade level graphics and sound. The additional programs were bits and pieces of various things. The issue also contained an educational department which included a classical puzzle. In all, I highly recommend this series. C

# WORD PROCESSORS

*Continued from pg. 72*

interrupt printing or previewing to make changes and then return automatically to the same place when ready to continue. You can use the spelling checker without having to shut off the word processor and load another program. About the only thing it doesn't do is multi-column printing. Control is by mnemonics, augmented by prompts that appear at the top of the screen.

**Paperback Writer**: This one lets you write on a true 80-column screen. What you see on the screen is what you get when you print it out on paper. There is also a 40-column version on the same disk. In both versions, the screen will scroll horizontally an infinite number of columns. There are two menus, the most effective I've seen, that eliminate any need to remember arcane commands, yet work almost as quickly as embedding commands directly in the text. There are five help screens resident in the program and 38 more on the program disk. Better yet, the menu and help area can be turned off or on at will, giving 23 lines of text, plus a status line and a TAB scale. In the 80-column version, that amounts to about three-fourths of a page of double-spaced printing. It displays underlined text as underlined on the screen, italics as italic, and boldface as bold. It will display returns or space-markers if you want it to. It alphabetizes lists and adds columns and rows of numbers, although not in as many ways as *PaperClip* will. Because of all these features, *Paperback Writer* is reasonably transparent, yet still quite powerful.

However, if it sounds like the perfect word processor, I should point out that in the 80-column version, the text capacity is limited to about five or six double-spaced pages (although linking files is easy). Also, when you are inserting something into your text, the action is sometimes very sluggish, with pauses of nearly two seconds as the text is being re-formatted. The text capacity of the 40-column version is nearly twice as large, but you must check on format by scrolling the 40-column screen. To see the full width of your text, you have to save it, load the 80-column version, and then re-load the text. (I might also point out that, despite those drawbacks, I'm writing this article on it.)

**Write Now**: This comes on cartridge, so it loads instantly. There is no need to swap disks in the drive, and it also works well with files stored on tape. It's also one of the most transparent word processors available. It uses the spatial system of dedicating the top row of keys to control functions. Keyboard overlays identify these function keys and make control much faster than with any menu system. Text entry is the streaming type, but a true 80-column preview display makes the format clear, and on a monitor is legible enough for easy proofreading. Format and printer codes must be embedded as "dot codes," but five resident help screens make this relatively easy.

**SkiWriter II**: This is also on car-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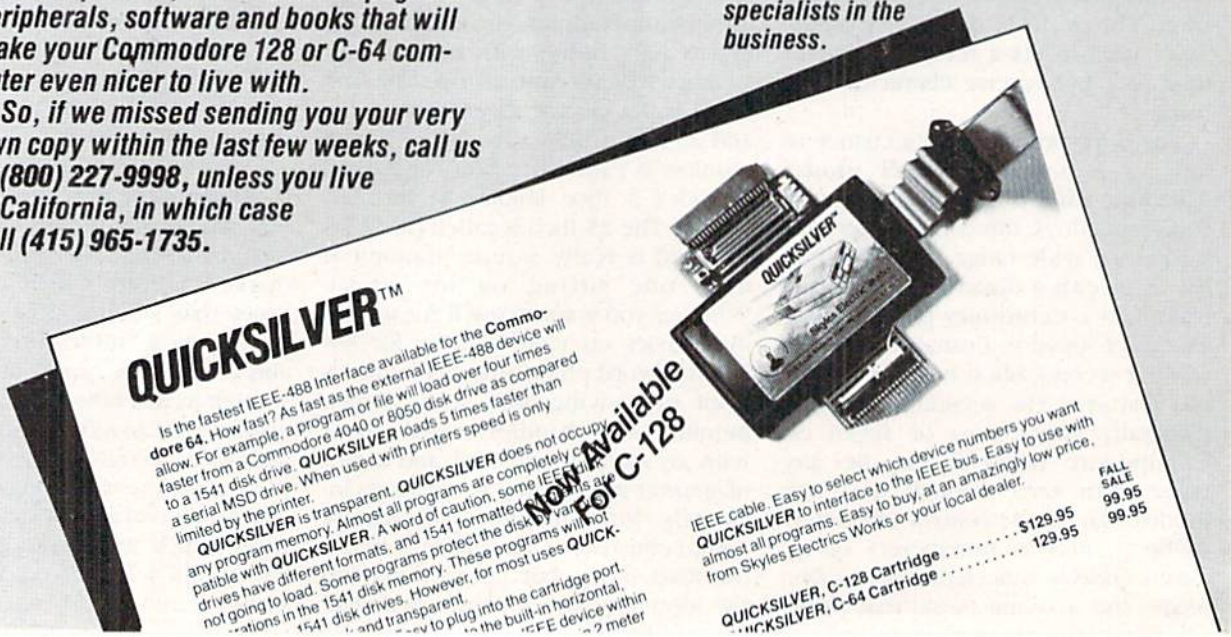

tridge and will work with either tape or disk. However, its most interesting feature is that it is both a word processor and a smart terminal, all in one. Most other so-called "integrated" word processor packages oblige you to quit one program and load another before you can use it. With this one, you can move at will from typing to transmitting and back again. You can download a file from another computer and read it immediately, just by making a selection from a menu.

*SkiWriter II* is simple to operate—and also somewhat simple in its word processing and terminal abilities, since almost nothing is automatic. The preview display is a scrolling 40-column window. There are no macros, no fancy text-manipulating tricks. And the menus, though clear, are slow. Still, this is an interesting compromise and could be very useful.

**HomeWord**: This is absolutely the easiest word processor to learn and one of the simplest to operate. It uses icon-type menus—pictures at the bottom of the screen that identify the various selections. (Most people identify pictures more readily than words. The icons are also labeled.) Although the icons cannot be turned off, it is possible to bypass them quickly by typing the appropriate commands. There are two tutorial cassette tapes and a brief, clear manual. Typing is in 40 columns with word wrap. In addition, a small 80-column format map is visible all the time you are typing, and there is a true 80-column preview display.

There are also some disadvantages. The icons take up quite a lot of the screen, leaving only 15 lines for text. Also, the text capacity is small, about the same as the 80-column *Paperback Writer*. And to access the 80-column preview mode takes nearly half a minute of disk operation and another half minute to get back to the typing mode, although this is not such a hindrance because of the constantly updated format map.

**WordPro 64**: This is the only Commodore 64 word processor I know of that can do double-column printing. You enter text in one long batch, but during printing, it comes out in two columns, side by side. (It also does single-column printing, of course.) You can also specify book numbering, with the numbers of alternate pages at opposite sides of the page. For checking on the format, it provides a preview map that is 160 columns wide, twice the width provided by any other word processor.

## Final Advice

Even the worst word processor will beat a conventional typewriter for most writing or typing jobs. By studying the chart on pages 118-121, however, you should be able to pick out fairly quickly a number of them that appear most likely to fit your needs. Any of them will probably suit you just fine. But hands-on experience is needed if you want to find the one that is *exactly* right for you. The next logical step, therefore, is to try out as many as possible before you buy, to find out how they *feel*. C


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# Commodore 64 Word Processors

## Table 2.

The main chart assumes that each word processor listed has at least the features identified in the sidebar as "standard" and many of those in the "full-featured" category.
Exceptions are noted in the right-hand column.

y = yes"
D = Disk
C = Cartridge

| | DISPLAY | | | | | | | CONTROL | | | | | | | | | TEXT ENHANCEMENTS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | COPYRIGHT | MEDIUM (CARTRIDGE/DISK) | LINES AND COLUMNS | LINES AND COLUMNS | TEXT CAPACITY | WIDTH (MAX) | MENU | MNEMONIC | SPATIAL | OVERLAY | REFERENCE CARD | HELP SCREEN | WRITE/EDIT IN SAME MODE | MENU | EMBEDED CODES | VISIBLE ON-SCREEN | FILE TYPE | LOAD FROM DIRECTORY | LOAD 10K FILE (SEC) | NON-DESTRUCTIVE LOAD | TIME (READY TO TYPE) (SEC) | DRIVE QUIET |
| **Bank Street Writer**<br>Broderbund, Inc.<br>$49.95 | 1983 | D | 19 x 38<br>word-wrap | page breaks only | "3,000 words" | 126 | y | | | | | | | | y | | prg | y | | y | 88 | | |
| **CircaScript**<br>Circadian Software<br>$39.95 | 1983 | D | 24 x 40<br>streaming | none | 39,166 | ??? | y | y | | | | y | y | | y | | prg | | 27 | | 40 | y | |
| **Creative Writer**<br>Creative Software<br>$49.95 | 1984 | D | 24 x 40<br>word-warp | 59 x 80<br>format map | 28,000 | 132 | y | y | | | | y<br>(on disk) | y | y | | | prg | y | 33 | | 52 | y | |
| **Cut & Paste**<br>Electronic Arts<br>$35.00 | 1983 | D | 22 x 40<br>word-wrap | none | 29,683 | ??? | y | | | | y | | y | y | | | ?? | y | | | 208 | y | |
| **Easy Script**<br>Commodore Business Machines<br>$54.95 | | D | 24 x 40<br>streaming | 24 x 40<br>scrolling | 30,560 | 240 | | y | | | | | y | | y | | seq | y | 27 | y | 87 | | |
| **Fleet System 2**<br>Professional Software, Inc.<br>$79.95 | 1984 | D | 23 x 40<br>streaming<br>scroll option | 23 x 40<br>scroll option | 16,000 | 120 | | y | | | | y<br>(load into extra mem. area) | y | | y | | usr | | 33 | | 114 | | |
| **HomePak** (HomeText portion)<br>Batteries Included<br>$49.95 | 1984 | D | 21 x 40<br>word-wrap | 80<br>map | 13,501 | 160 | y | y | | | | | y | y | y | y | seq | | 77 | y | 110 | y | |
| **HomeWord**<br>Sierra<br>$69.95 | 1983/84 | D | 15 x 40<br>word-wrap | 24 x 80<br>true 80 columns | 6,900 | 132 | y<br>(icon) | y<br>(option) | | | | y<br>(on disk) | y | y | | y<br>(as labels) | ?? | y | 6,900k<br>= 61 sec | | 109 | | |
| **Kwik-Write!**<br>Datamost, Inc.<br>$19.95 | 1984 | D | 22 x 40<br>word-wrap<br>scroll option | 24 x 40<br>scrolling | 34,545 | 132 | y | y | | | | y<br>(on disk) | y | y | y | | prg,<br>seq,<br>usr | | 14 | | 35 | y | |
| **Letter Wizard**<br>Datasoft<br>$74.95 | 1983 | D | 20 x 40<br>word-wrap | none | 33,000 | ??? | | y | | | y | | y | | y | y | seq | | 36 | y | 60 | y | |
| **Magic Desk I**<br>Commodore Business Machines<br>$49.95 | 1983 | C | 15 x 40<br>streaming | none | ??? | 80 | y<br>(icons) | | | | | y | y | | | | rel | y | | | 0<br>(cartridge) | | |
| **OmniWriter & OmniSpell**<br>Human Engineered Software<br>$34.95 | 1983 | D | 21 x 40<br>word-wrap<br>(scroll option) | none | 34,000 | 240 | (prompts) | y | | y | y | y<br>(must load first) | y<br>(special key to insert & delete) | | y | y | prg | | 20 | y | 84 | | |
| **The Package** (W/P portion)<br>Intelligent Software<br>$35.00 | 1983 | D | 24 x 40<br>streaming | 24 x 40 | ??? | ??? | | y | | | | y | | | | | seq | | ?? | | 22 | y | |
| **Paperback Writer**<br>Digital Solutions, Inc.<br>$39.95 | 1985 | D | 23 x 40<br>23 x 80<br>word-wrap<br>scroll option | same<br>(on-screen text formatting while writing) | 15,860 (40)<br>6,900 (80) | 10k<br>6.9k | y<br>y | | | | | y<br>y<br>(memory & disk) | y | y | | y | prg,<br>seq | y | 36 | y | 45 | y | |
| **PaperClip with Spell Pack**<br>Batteries Included<br>$119.95<br>($89.95 w/o Spell Pack) | 1984 | D | 23 x 40<br>streaming<br>scroll option | 23 x 40<br>scrolling<br>true 80 column | 16,000 | 250 | | y | | | | | y | | y | | prg,<br>seq | y | 30 | y | 98 | y | |

In the "CONTROL" section:

"MNEMONIC" means that you use CTRL keys (eg: CTRL-s) as dedicated function keys. I called them "mnemonics" because generally you have to remember them—as distinct from the next two categories.

"SPATIAL" means that a row of keys is dedicated as function keys. This is a spatial arrangement, rather than the random locations of "mnemonic" function keys. A keyboard overlay identifies the function of each key.

"MENU" means that you control the word processor by making selections from one or more on-screen menus.

| | FILING AND LOADING | | | | | | | PRINTING | MANUAL | | | | | SPECIAL FEATURES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SAVE PART OF TEXT | LINKED FILES | MAIL MERGE | CONTENTS | INDEX | REFERENCE SECTION | TUTORIAL | SUM CHART | NUMBER PAGES | KEY CLICK | OTHER SOUNDS | CHANGE COLORS | DELETE TO RIGHT | DELETE BUFFER | MARGIN RELEASE | SPELLING CHECKER BUILT-IN | CALCULATOR | ALPHABETIZE | TERMINAL | DATABASE MANAGER | SPREADSHEET | LEARNING TIME | MANUAL NEEDED OFTEN |
| | y | | y | y | | | y | 88 | | | y | | | | | | | | | | | av | | |
| | | | y | y | y | y | | 36 | | | y | | | | | | | | | | | av | y | |
| | y | y | y | y | | | y | 30 | | | | | y | | | | | | | | | av | | |
| | | | y | | | | y | 14 | | y | | | y | | | | | | | | | av | | |
| y | y | y | y | y | y | y | | 150 | | | y | | | y | | | | | | | | long | y | |
| y | y | y | y | y | y | | y | 200 | | y | | | | y | y | | | | | | | av | y | |
| | y | | y | | | y | y | 61 | y | y | y | | | | | | | y | y | | | brief | | |
| y | | | y | y | y | y | y | 65 | | y | | y | | outline format | y | | | | | | | very brief | | |
| | y | | | | | | y | 20 | | | y | y | | | | | | | | | | av | | |
| y | y | y | y | y | | | y | 66 | | y | y | y | | | y | | | | | | | av | y | |
| | | | | | | | y | 6 | y | y | | | | | | | | | | | | brief | | |
| y | | y | y | | | | y | 78 | | y | y | | | | y | | | | | | | av | y | |
| | | | y | | | | | on disk | | | | | | | | | | | y | | | av | | |
| | y | y | y | y | y | | | 48 | | y | y | y | | y | y | y | y | | | | | fairly brief | | |
| y | y | y | y | y | y | y | y | 127 | | | y | | | y | y | y | y | | | | | fairly long | y | |

Continued on Next Page


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# Commodore 64 Word Processors
## Table 2, Continued.

| | | | | DISPLAY | | | | CONTROL | | | | | | | | TEXT ENHANCEMENTS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | COPYRIGHT | MEDIUM (CARTRIDGE/DISK) | LINES AND COLUMNS | LINES AND COLUMNS | TEXT CAPACITY | WIDTH (MAX) | MENU | MNEMONIC | SPATIAL | OVERLAY | REFERENCE CARD | HELP SCREEN | WRITE-EDIT IN SAME MODE | MENU | EMBEDDED CODES | VISIBLE ON SCREEN | FILE TYPE | LOAD FROM DIRECTORY | LOAD 10K FILE (SEC) | NON-DESTRUCTIVE LOAD | TIME READY TO TYPE (SEC) | DRIVE QUIET |
| **Script 64**<br>Richvale Telecommunications Ltd.<br>$58.00 | | D | 22 x 40 streaming<br>22 x 80 on-scrn formatting | none | 25,200 (40)<br>28,000 (80) | 231 | y | | y | | y<br>(disk) | y | y | | | prg | y | | y | 83 | y | |
| **SkiWriter II**<br>Prentice-Hall<br>$69.95 | 1984 | C | 21 x 40 word-wrap | 21 x 40 scrolling | 28,000 | 99 | y | y<br>(optional) | | y | | | y | y | y | y | seq | y | 27<br>(40 to SAVE new file) | | 0<br>(cartridge) | | |
| **Speed Script**<br>COMPUTE! Publications, Inc.<br>$14.95 disk<br>$ 9.95 book | 1985 | D | 24 x 40 word-wrap | none | 43,250 | 255 | y | y | y | y | | y | | y | | prg | | | y | 21 | y | |
| **Super-Text**<br>Muse Software<br>$79.95 | 1983 | D | 24 x 40<br>24 x 80<br>word-wrap | 24 x 40<br>24 x 80 | 22,850 | 133 | | y | | | y<br>(80 col only) | | | y | | seq | y | 96 | y | 120 | y | |
| **Textomat-64**<br>Abacus Software, Inc.<br>$39.95 | 1984 | D | 22 x 40 streaming | 22 x 40 scrolling | ??? | ??? | y | | | | | y | y | | | prg | | 30 | y | 105 | y | |
| **Typro 64**<br>Input Systems, Inc.<br>$58.00 | 1982 | D | 22 x 40 | none | ??? | 70 | y | | | | | | | | | usr | y | | | 61<br>(8 manual steps) | y | |
| **Word Commander 64**<br>MMG Micro Software<br>$29.95 | 1984 | D | 23 x 40 word-wrap | 23 x 40 scrolling | 34,000 | ??? | prompts | y | | y | | y | | y | | prg | | 23 | | 60 | | |
| **Word Machine & Name Machine**<br>Commodore Business Machines | 1982 | D | 25 x 40 streaming | 20 x 39 | 28,900 | ??? | y | | | | | | | | | | | | | 24<br>(6 manual steps) | y | |
| **Word Processor—Professional**<br>Mirage Concepts, Inc.<br>$49.95 | 1984 | D | 17 x 40<br>17 x 80<br>word-wrap<br>on-screen formatting | none needed | 14,000 (40)<br>9,599 (80) | 255 | | y | | y | | y | | y | | seq | | 27 | y | 98 | y | |
| **WordPro 3 Plus/64**<br>Professional Software, Inc.<br>$99.95 | 1982 | D | 23 x 40 streaming | none | 14,080 | 164 | | y | | | | y | | y | | prg | | 28 | y | 66<br>(4 manual steps) | y | |
| **WordPro 64**<br>Pro-Line Software Inc.<br>$49.95 | 1984 | D | 23 x 40 word-wrap | 23 x 40 scrolling<br>160 col map | 16,360 | 160 | | y | | | | y | | y | y | prg | y | 78 | y | 88 | y | |
| **The Word Worker**<br>Design Enterprises of San Francisco<br>$49.95 | 1983 | D | 25 x 35 streaming | 20 x 35 | ??? | 130 | | y | | | | | | y | | | | ?? | y | 99 | y | |
| **Word Writer**<br>Timeworks, Inc.<br>$49.95 | 1983 | D | 21 x 40 word-wrap<br>scroll option | 21 x 40 scrolling | ??? | 250 | prompts | | y | y | | y | | y | | seq | | 27 | y | 107<br>(4 manual steps) | y | |
| **The Write File**<br>Tri Micro<br>$29.95 | 1983 | D | 22 x 37 streaming | none | 7,623 | 77 | | y | | | y | y | | | | seq | | | y | 109 | y | |
| **WRITE NOW!**<br>Caraco, Inc.<br>$44.95 | 1984 | C | 24 x 40 streaming | 24 x 80<br>true 80 col | 30,712 | 250 | | | y | y | | y | | y | | prg | | 31 | y | 0<br>(cartridge) | | |
| **Your Home Office**<br>Tri Micro<br>$29.95 | 1983 | D | 22 x 37 streaming | none | 7,623 | 77 | | y | | | y | y | | | | seq | | | y | 109 | y | |

| FILING AND LOADING | | | | | | | PRINTING | MANUAL | | | | | | SPECIAL FEATURES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAVE PART OF TEXT | LINKED FILES | MAIL MERGE | CONTENTS | INDEX | REFERENCE SECTION | TUTORIAL | SUM CHART | NUMBER PAGES | KEY CLICK | OTHER SOUNDS | CHANGE COLORS | DELETE TO RIGHT | DELETE BUFFER | MARGIN RELEASE | SPELLING CHECKER BUILT-IN | CALCULATOR | ALPHABETIZE | TERMINAL | DATABASE MANAGER | SPREADSHEET | LEARNING TIME | MANUAL NEEDED OFTEN | |
| y (40 c only) | | y | y | y | y | y | 158 | | | | | | | | | | | | | long | y | | |
| | | | y | y | | | 49 | | | y | y | | y | | | | y | | | brief | | | |
| | y | | y | y | | | y | 26 (in a 139 pg book) | | | y | y | y | | | | | | | | | | |
| y | y | y | y | | y | y | y | 138 | | | y | | | | | y | | | | | av | | |
| y | y | y | y | | | y | | 106 | | | y | | | | | y | | | | | av | y | |
| | | | | y | | | | 21 | | | y | | | | | | | y | | | av | y | |
| | y | y | y | y | y | y | y | 36 | | | y | y | | | | | | | | | av | y | |
| | | y | y | | | | y | y | 14 | | | y | | | | | | | | | | av | | |
| y | y | y | y | y | y | y | y | 232 | y | y | y | y | | | y | | | | | | long | y | |
| y | y | y | y | y | | y | y | 144 | | y | y | | | | y | y | | | | | long | y | |
| | y | y | y | y | y | y | | 74 | | | y | | | y | | | | | | | long | y | |
| | | | | | | | | 12 | | | | | | | | | | | | | av | | |
| y | y | y | y | | | y | | 151 | | y | y | | | | y | y | | | | | av | y | |
| | y | | y | | | | | 39 | | | | | | | | | | y | | | av | | |
| y | y | y | y | y | y | | | 108 | y | y | y | | y | | | | | | | | fairly brief | | |
| | y | | y | | | | | 49 | | | | | | | | | | | y | | av | | |


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# RESET MASTER

*Continued from Pg. 96*

You go about your hacking until you experience a lockup. You touch the red button on top of the Reset Master, the screen clears for a second or two, and the opening "BYTES FREE" message appears as if the machine had just been turned on. Stay calm at this point. For the heck of it, try to list the program now. Nothing, right? Don't worry about it. Type in SYS 50000:CLR (or whatever SYS number is appropriate for your machine) and hit a RETURN. Now list it. Bingo—there it is.

Now you can go through the program to debug it or try re-running it again to see where the problem is. The "Renew" program will remain in memory until you actually shut the machine off. Of course, if you don't load the program in at the start of each session, it can't be used. For this reason, loading and running "Renew" should be your first order of business upon turning the machine on.

The SYS number given to you when the "Renew" program is run represents the starting address of the machine language. This location can be changed if it conflicts with your programming requirements. Changing the starting address is explained in the REM statements of "Renew." Touching the reset button on the machine is also a convenient means of killing a program you have running without having to shut the machine off.

The Reset Master is warranted for 90 days from the date of purchase against defects in materials and workmanship. It's a nifty little gizmo that packs a lot of features into a small package. It works well, is simple to use, is well made, and does everything it claims to do—what more could you ask? Don't forget, it also extends your usable peripheral range by two feet and gives you an additional serial port. These bonus convenience features add to an already value-packed unit.

If you've ever experienced the frustration of a program crash, you'll want to get yourself a Reset Master right away. If you've never had a crash, Reset Master can save you from this highly unpleasant experience for a very reasonable cost. Since first installing mine, I've come to regard it as standard operating equipment—you will too. C

# HOW TO ENTER PROGRAMS

The programs which appear in this magazine have been run, tested and checked for bugs and errors. After a program is tested, it is printed on a letter quality printer with some formatting changes. This listing is then photographed directly and printed in the magazine. Using this method ensures the most error-free program listings possible.

Whenever you see a word inside brackets, such as [DOWN], the word represents a keystroke or series of keystrokes on the keyboard. The word [DOWN] would be entered by pressing the cursor-down key. If multiple keystrokes are required, the number will directly follow the word. For example, [DOWN4] would mean to press the cursor-down key four times. If there are multiple words within one set of brackets, enter the keystrokes directly after one another. For example, [DOWN, RIGHT 2] would mean to press the cursor-down key once and then the cursor-right key twice.

In addition to these graphic symbols, the keyboard graphics are all represented by a word and a letter. The word is either SHIFT or CMD and represents the SHIFT key or the Commodore key. The letter is one of the letters on the keyboard. The combination [SHIFT E] would be entered by holding down the SHIFT key and pressing the E. A number following the letter tells you how many times to type the letter. For example, [SHFT A4,CMD B3] would mean to hold the SHIFT key and press the A four times, then hold down the Commodore key and press the B three times.

The chart on this page tells you the keys to press for any word or words inside brackets. Refer to this chart whenever you aren't sure what keys to press. The little graphic next to each keystroke shows you what you will see on the screen.

### SYNTAX ERROR

This is by far the most common error encountered while entering a program. Usually (sorry folks) this means that you have typed something incorrectly on the line the syntax error refers to. If you get the message "?Syntax Error Break In Line 270", type LIST 270 and press RETURN. This will list line 270 to the screen. Look for any non-obvious mistakes like a zero in place of an O or vice-versa. Check for semicolons and colons reversed and extra or missing parenthesis. All of these things will cause a syntax error.

There is only one time a syntax error will tell you the 'wrong' line to look at. If the line the syntax error refers to has a function call (i.e., FN A(3)), the syntax error may be in the line that defines the function, rather than the line named in the error message. Look for a line near the beginning of the program (usually) that has DEF FN A(X) in it with an equation following it. Look for a typo in the equation part of this definition.

### ILLEGAL QUANTITY ERROR

This is another common error message. This can also be caused by a typing error, but it is a little harder to find. Once again, list the line number that the error message refers to. There is probably a poke statement on this line. If there is, then the error is referring to what is trying to be poked. A number must be in the range of zero to 255 to be poke-able. For example, the statement POKE 1024,260 would produce an illegal quantity error because 260 is greater than 255.

Most often, the value being poked is a variable (A,X...). This error is telling you that this variable is out of range. If the variable is being read from data statements, then the problem is somewhere in the data statements. Check the data statements for missing commas or other typos.

If the variable is not coming from data statements, then the problem will be a little harder to find. Check each line that contains the variable for typing mistakes.

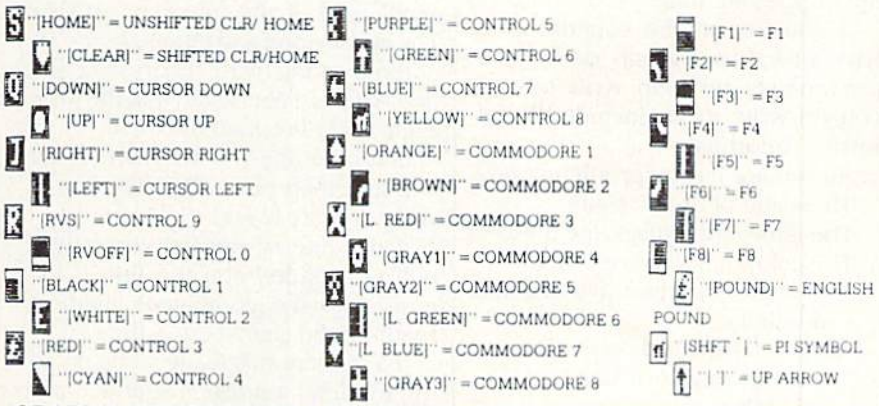
### OUT OF DATA ERROR

This error message is always related to the data statements in a program. If this error occurs, it means that the program has run out of data items before it was supposed to. It is usually caused by a problem or typo in the data statements. Check first to see if you have left out a whole line of data. Next, check for missing commas between numbers. Reading data from a page of a magazine can be a strain on the brain, so use a ruler or a piece of paper or anything else to help you keep track of where you are as you enter the data.

### OTHER PROBLEMS

It is important to remember that the 64 and the PET/CBM computers will only accept a line up to 80 characters long. The VIC 20 will accept a line up to 88 characters long. Sometimes you will find a line in a program that runs over this number of characters. This is not a mistake in the listing. Sometimes programmers get so carried away crunching programs that they use abbreviated commands to get more than 80 (or 88)

## CHART OF SPECIAL CHARACTER COMMANDS




GRAPHIC SYMBOLS WILL BE REPRESENTED AS EITHER THE LETTERS SHFT (SHIFT) AND A KEY ("[SHFT Q,SHFT J,SHFT D,SHFT S]") OR THE LETTERS CMDR (COMMODORE) AND A KEY ("[CMDR Q,CMDR G,COMDR Y,CMDR H]"). IF A SYMBOL IS REPEATED, THE NUMBER OF REPITITIONS WILL BE DIRECTLY AFTER THE KEY AND BEFORE THE COMMA ("[SPACE3,SHFT S4,CMDR M2]")

characters on one line. You can enter these lines by abbreviating the commands when you enter the line. The abbreviations for BASIC commands are on pages 133-134 of the VIC 20 user guide and 130-131 of the Commodore 64 user's guide.

If you type a line that is longer than 80 (or 88) characters, the computer will act as if everything is ok, until you press RETURN. Then, a syntax error will be displayed.

**THE PROGRAM WON'T RUN!!**

This is the hardest of problems to resolve; no error message is displayed, but the program just doesn't run. This can be caused by many small mistakes typing a program in. First check that the program was written for the computer you are using. Check to see if you have left out any lines of the program. Check each line of the program for typos or missing parts. Finally, press the RUN/STOP key while the program is 'running'. Write down the line the program broke at and try to follow the program backwards from this point, looking for problems.

**IF ALL ELSE FAILS**

You've come to the end of your rope. You can't get the program to run and you can't find any errors in your typing. What do you do? As always, we suggest that you try a local user group for help. In a group of even just a dozen members, someone is bound to have typed in the same program.

If you do get a working copy, be sure to compare it to your own version so that you can learn from your errors and increase you understanding of programming.

If you live in the country, don't have a local user group, or you simply can't get any help, write to us. If you do write to us, include the following information about the program you are having problems with:

The name of the program
The issue of the magazine it was in
The computer you are using
Any error messages and the line numbers
Anything displayed on the screen
A printout of your listing (if possible)

Send your questions to:

*Commodore Microcomputers*
1200 Wilson Drive
West Chester, PA 19380
ATTN: Program Problem **C**

## How to Use the Magazine Entry Program

The Magazine Entry Program on page 125 is a machine language program that will assist you in entering the programs in this magazine correctly. It is for use with the Commodore 64 only and was written by Mark Robin using the IEA Editor/Assembler. Once the program is in place, it works its magic without you having to do anything else. The program will not let you enter a line if there is a typing mistake on it, and better yet, it identifies the kind of error for you.

**Getting Started**

Type in the Magazine Entry Program carefully and save it as you go along (just in case). Once the whole program is typed in, save it again on tape or disk. Now RUN the program. The word POKING will appear on the top of the screen with a number. The number will increment from 49152 up to 50052, and just lets you know that the program is running. If everything is ok, the program will finish running **and end. Then** type NEW. If there is a problem with the data statements, the program will tell you where to look to find the problem.

Once the program has run, it is in memory ready to go. To activate the program, type SYS49152 and press RETURN. When the READY prompt is displayed, type TEST and press RETURN. You are now ready to enter the programs from the magazine.

**Typing the Programs**

All the program listings in this magazine that are for the 64 have an apostrophe followed by four letters at the end of the line (i.e., 'ACDF). The apostrophe and letters *should* be entered along with the rest of the line. This is a checksum that the Magazine Entry Program uses.

Enter the line and the letters at the end and then press RETURN, just as you normally would.

If the line is entered correctly, a bell is sounded and the line is entered into the computer's memory (without the characters at the end).

If a mistake was made while entering the line, a noise is sounded and an error message is displayed. Read the error message, then press any key to erase the message and correct the line.

**IMPORTANT**

If the Magazine Entry Program sees a mistake on a line, it *does not* enter that line into memory. This makes it impossible to enter a line incorrectly.

**Error Messages and What They Mean**

There are six error messages that the Magazine Entry Program uses. Here they are, along with what they mean and how to fix them.

**NO CHECKSUM:** This means that you forgot to enter the apostrophe and the four letters at the end of the line. Move the cursor to the end of the line you just typed and enter the checksum.

**QUOTE:** This means that you forgot (or added) a quote mark somewhere in the line. Check the line in the magazine and correct the quote.

**PARENTHESIS:** This means that you forgot (or added) a parenthesis somewhere in the line. Check the line in the magazine again and correct the parenthesis.

**KEYWORD:** This means that you have either forgotten a command or spelled one of the BASIC keywords (GOTO, PRINT..) incorrectly. Check the line in the magazine again and check your spelling.

**# OF CHARACTERS:** This means that you have either entered extra characters or missed some characters. Check the line in the magazine again. This error message will also occur if you misspell a BASIC command, but create another keyword in doing so. For example, if you misspell PRINT as PRONT, the 64 sees the letter P and R, the BASIC keyword ON and then the letter T. Because it sees the keyword ON, it thinks you've got too many characters, instead of a simple misspelling. Check spelling of BASIC commands if you can't find anything else wrong.

**UNIDENTIFIED:** This means that you have either made a simple spelling error, you typed the wrong line number, or you typed the checksum incorrectly. Spelling errors could be the wrong number of spaces inside quotes, a variable spelled wrong, or a word mispelled. Check the line in the magazine again and correct the mistake. **C**

# Magazine Entry Program

The Magazine Entry Program is available on disk, along with the other programs in this magazine, for $9.95. To order, contact Loadstar at 1-800-831-2694.

```
1 PRINT "[CLEAR]POKING-";
5 P=49152 :REM $C000
10 READ A$:IF A$="END"THEN 80
20 L=ASC(MID$(A$,2,1))
30 H=ASC(MID$(A$,1,1))
40 L=L-48:IF L>9 THEN L=L-7
50 H=H-48:IF H>9 THEN H=H-7
60 PRINT"[HOME,RIGHT12]"P;
70 B=H*16+L:POKE P,B:T=T+B:P=P+1
   :GOTO 10
80 IF T<>103233 THEN PRINT"MISTAKE IN
   DATA --> CHECK DATA STATEMENTS":END
90 PRINT"DONE":END
1000 DATA 4C,23,C0,00,00,00,00,00
1001 DATA 00,00,00,00,00,00,00,0D
1002 DATA 00,58,C1,5E,C1,66,C1,76
1003 DATA C1,83,C1,8F,C1,EA,EA,EA
1004 DATA 4C,83,C0,A2,05,BD,1D,C0
1005 DATA 95,73,CA,10,F8,60,A0,02
1006 DATA B9,00,02,D9,3C,C1,D0,0B
1007 DATA 88,10,F5,A9,01,8D,10,C0
1008 DATA 4C,1F,C1,60,A0,03,B9,00
1009 DATA 02,D9,38,C1,D0,E0,88,10
1010 DATA F5,A9,00,8D,10,C0,4C,1F
1011 DATA C1,60,A0,03,B9,00,02,D9
1012 DATA 34,C1,D0,E0,88,10,F5,A0
1013 DATA 05,B9,A2,E3,99,73,00,88
1014 DATA 10,F7,A9,00,8D,18,D4,4C
1015 DATA 1F,C1,E6,7A,D0,02,E6,7B
1016 DATA 4C,79,00,A5,9D,F0,F3,A5
1017 DATA 7A,C9,FF,D0,ED,A5,7B,C9
1018 DATA 01,D0,E7,20,5A,C0,AD,00
1019 DATA 02,20,A3,C0,90,DC,A0,00
1020 DATA 4C,EA,C1,C9,30,30,06,C9
1021 DATA 3A,10,02,38,60,18,60,C8
1022 DATA B1,7A,C9,20,D0,03,C8,D0
1023 DATA F7,B1,7A,60,18,C8,B1,7A
1024 DATA F0,35,C9,22,F0,F5,6D,05
1025 DATA C0,8D,05,C0,AD,06,C0,69
1026 DATA 00,8D,06,C0,4C,BD,C0,18
1027 DATA 6D,07,C0,8D,07,C0,90,03
1028 DATA EE,08,C0,EE,0B,C0,60,18
1029 DATA 6D,0A,C0,8D,0A,C0,90,03
1030 DATA EE,09,C0,EE,0C,C0,60,0A
1031 DATA A8,B9,11,C0,85,FB,B9,12
1032 DATA C0,85,FC,A0,00,A9,12,20
1033 DATA D2,FF,B1,FB,F0,06,20,D2
1034 DATA FF,C8,D0,F6,20,54,C3,20
1035 DATA 7E,C3,20,E4,FF,F0,FB,A0
1036 DATA 1B,B9,3F,C1,20,D2,FF,88
1037 DATA 10,F7,68,68,A9,00,8D,00
1038 DATA 02,4C,74,A4,4B,49,4C,4C
1039 DATA 54,45,53,54,41,44,44,91
1040 DATA 91,0D,20,20,20,20,20,20
1041 DATA 20,20,20,20,20,20,20,20
1042 DATA 20,20,20,20,20,20,91,0D
1043 DATA 51,55,4F,54,45,00,4B,45
1044 DATA 59,57,4F,52,44,00,23,20
1045 DATA 4F,46,20,43,48,41,52,41
1046 DATA 43,54,45,52,53,00,55,4E
1047 DATA 49,44,45,4E,54,49,46,49
1048 DATA 45,44,00,4E,4F,20,43,48
1049 DATA 45,43,4B,53,55,4D,00,50
1050 DATA 41,52,45,4E,54,48,45,53
1051 DATA 49,53,00,C8,B1,7A,D0,FB
1052 DATA 84,FD,C0,09,10,03,4C,C7
1053 DATA C1,88,88,88,88,88,B1,7A
1054 DATA C9,27,D0,13,A9,00,91,7A
1055 DATA C8,A2,00,B1,7A,9D,3C,03
1056 DATA C8,E8,E0,04,D0,F5,60,4C
1057 DATA F2,C2,A0,00,B9,00,02,99
1058 DATA 40,03,F0,F2,C8,D0,F5,A0
1059 DATA 00,B9,40,03,F0,E8,99,00
1060 DATA 02,C8,D0,F5,20,D7,C1,4C
1061 DATA 56,C2,A0,0B,A9,00,99,03
1062 DATA C0,8D,3C,03,88,10,F7,A9
1063 DATA 80,85,02,20,1B,C3,A0,00
1064 DATA 20,9B,C1,20,CA,C1,20,31
1065 DATA C2,E6,7A,E6,7B,20,7C,A5
1066 DATA A0,00,20,AF,C0,F0,CD,24
1067 DATA 02,F0,06,20,D7,C0,4C,12
1068 DATA C2,C9,22,D0,06,20,BC,C0
1069 DATA 4C,12,C2,20,E7,C0,4C,12
1070 DATA C2,A0,00,B9,00,02,20,A3
1071 DATA C0,C8,90,0A,18,6D,09,C0
1072 DATA 8D,09,C0,4C,33,C2,88,A2
1073 DATA 00,B9,00,02,9D,00,02,F0
1074 DATA 04,E8,C8,D0,F4,60,18,AD
1075 DATA 0B,C0,69,41,8D,0B,C0,38
1076 DATA AD,0C,C0,E9,19,90,06,8D
1077 DATA 0C,C0,4C,60,C2,AD,0C,C0
1078 DATA 69,41,8D,0C,C0,AD,05,C0
1079 DATA 6D,07,C0,48,AD,06,C0,6D
1080 DATA 08,C0,8D,0E,C0,68,6D,0A
1081 DATA C0,8D,0D,C0,AD,0E,C0,6D
1082 DATA 09,C0,8D,0E,C0,38,E9,19
1083 DATA 90,06,8D,0E,C0,4C,96,C2
1084 DATA AD,0E,C0,69,41,8D,0E,C0
1085 DATA AD,0D,C0,E9,19,90,06,8D
1086 DATA 0D,C0,4C,AB,C2,AD,0D,C0
1087 DATA 69,41,8D,0D,C0,A0,01,AD
1088 DATA 0B,C0,CD,3C,03,D0,20,C8
1089 DATA AD,0C,C0,CD,3D,03,D0,17
1090 DATA C8,AD,0D,C0,CD,3E,03,D0
1091 DATA 0E,AD,0E,C0,CD,3F,03,D0
1092 DATA 06,20,64,C3,4C,7A,C0,AD
1093 DATA 10,C0,D0,11,98,48,68,4C
1094 DATA F7,C0,AD,10,C0,F0,01,60
1095 DATA A9,04,4C,F7,C0,A4,FD,A9
1096 DATA 27,91,7A,A2,00,C8,BD,0B
1097 DATA C0,91,7A,C8,E8,E0,04,D0
1098 DATA F5,A9,00,91,7A,20,64,C3
1099 DATA 4C,7A,C0,A0,00,B9,00,02
1100 DATA F0,11,C9,28,D0,03,EE,03
1101 DATA C0,C9,29,D0,03,EE,04,C0
1102 DATA C8,D0,EA,AD,03,C0,CD,04
1103 DATA C0,D0,01,60,A9,05,4C,F7
1104 DATA C0,A9,20,8D,00,D4,8D,01
1105 DATA D4,A9,09,8D,05,D4,A9,0F
1106 DATA 8D,18,D4,60,20,41,C3,A9
1107 DATA 81,20,77,C3,A9,80,20,77
1108 DATA C3,4C,71,C3,20,41,C3,A9
1109 DATA 11,20,77,C3,A9,10,20,77
1110 DATA C3,A9,00,8D,04,D4,60,8D
1111 DATA 04,D4,A2,70,A0,00,88,D0
1112 DATA FD,CA,D0,FA,60,END
```

# USER GROUPS

Commodore user groups nationwide and around the world provide invaluable assistance to Commodore computerists. If you are looking for people who share your computing interests, or if you need help getting started with your computer, contact the group near you.

This list is compiled from groups who responded to a survey conducted by Pete Baczor, Commodore's user group coordinator. If you would like your group to appear here, or if you need information about Commodore's user group support, contact Pete at Commodore Business Machines, 1200 Wilson Drive, West Chester, PA 19380.

### ALABAMA

Birmingham
Birmingham Commodore Computer Club
Harry Jones
4845 Avenue V Lot 7-B—35208

Enterprise
Wiregrass Micro-Computer Society
William H. Brown
109 Key Bend Rd.—36330

Mobile
Commodore Club of Mobile
Tom Wyatt
3868-H Rue Maison—36608

Pinson
Commodore Club—South
William J. Freeman
P.O. Box 324—35126

Scottsboro
Scottsboro C-64 Users' Group
Richard Radon
Rt. 5, Box 255—35768

### ALASKA

Calgary
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Lloyd Norman
810 Canfield Way SW—T2W 1K1

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Doug Gannon
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Ketchikan
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Sitka Commodore Users Group
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### ARIZONA

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Thomas Monson
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Gila Hackers
Paul R. Machula
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Commodore/PET Users Club
Geneva Bowlin
Davis Street—72032

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Russellville Commodore Users Group
Bob Brazeal
401 S. Arlington Dr.—72801

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Pasadena Commodore Computer Club
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Auburn Commodore Computer Club
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Hollywood Commodore Users Group
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11614 Red Dog Road—95959

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Western Slope Commodore Users Group
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Stan Czernel
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Stratford
Commodore User Group of Stratford
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### DELAWARE

Felton
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Newark Commodore Users Group
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### FLORIDA

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CHIPS Users Group
Gerald Klimczak
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Manasota Commodore Users Group
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Bay Commodore Users Group
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Commodore Advantage
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Pensacola
Commodore Users Group of Pensacola
Debbie Johnston
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Phil Belanger
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Shalimer
Ft. Walton Beach Commodore User Group
Jim Moore
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Tamarac
Broward Commodore Users Group
Lewis Horn
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Tavares
Triangle Educational Users Group
John Zeigler
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Zephyrhill
East Pasco Commodore Users Group
P.J. Bryden
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### GEORGIA

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Albany CBM Amatuer Computerist
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Atlanta
VIC-tims
Earl Dobney
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Morrow
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Oakwood
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Randdy Shuler
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# USER GROUPS

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Stowe Mountain
Atlanta C64 Users Group
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**IDAHO**

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## User Group Support Program

Commodore is creating a program to support Commodore User Groups.

The two major components—approved user group status and a newsletter are now available.

Approved user group status is given to any user group meeting our basic criteria. These user groups receive meeting posters and membership cards and are automatically sent Input/Output each month. In addition they can request a speaker from Commodore to come and discuss (and demonstrate) new products at one of their meetings.

The newsletter, INPUT/OUTPUT, will include announcements, user group programs, calendar of events, letters, questions, product specifications, programs, and surveys. It will be a newsletter FOR user groups BY user groups supported by Commodore without advertisements.

For future issues of the newsletter Commodore is accepting announcements of user group activities, articles of interest, letters to the editor, and general questions. Please forward all correspondence with the name of your user group to:

Commodore Business Machines
1200 Wilson Drive
West Chester, PA 19380
Attention either New User Group or Input/Output


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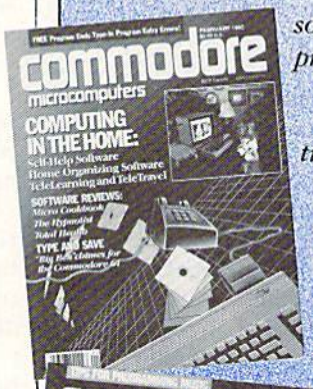


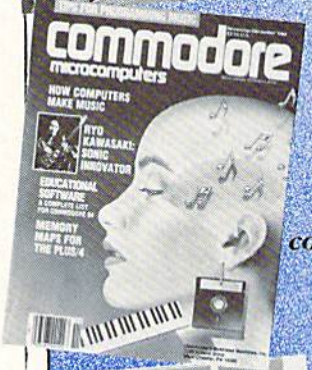


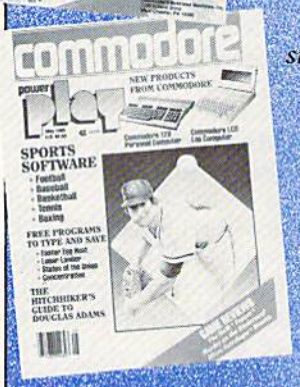


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*Continued from pg. 77*

Even if you are an experienced musician and/or programmer, however, producing music requires the proper tools. And there are many companies who are supporting this feature of the machine. For instance, Everyware, Inc. of Northridge, California, has *Musicraft,* which turns the Amiga into a professional four-voice synthesizer and sequencer. Cherry Lane Technologies of Port Chester, New York, has *Scorewriter,* which allows musicians to score and print music, and *Texture,* another music sequencing and editing package. They also produce *Harmony,* which uses artificial intelligence techniques to provide musical accompaniment as a musician performs. For the first time, the computer follows *your* lead, instead of you having to follow the computer.

For those sounds or musical effects that you have problems creating from scratch, the Amiga can help in another way. It can perform digital sampling of sound data. This means you can quickly and easily record an electronic version of any instrument, sound effect, or even human voices, save them, alter them and play them back in your programs.

Digital sampling is not the only way you can use the Amiga to create human speech. Included with the computer, as a standard feature, is a complete text-to-speech software system that uses the Amiga's sound capabilities to pronounce anything you wish it to say. It uses both the easier text-to-speech mode (type in a word and it will convert it to speech based upon an internal set of rules) and the somewhat more difficult phoneme approach. (Phonemes allow you to determine the pronunciation of a word exactly as you wish.)

As a result, anyone, professional programmers or beginners, can add voice to their work. I have been interested in speech synthesizers for some time, and have experience with a large number of them. I found the Amiga's voice to be better than any other software system I have heard yet, but not as good as some dedicated hardware-based systems. However, for the first time, speech is a standard feature on a computer, and you can be certain it will be used in a great many programs.

*There may be many minds out there just waiting for something to set them free. Perhaps the waiting is over.*

## Business Applications

One thing you should keep in mind, however, is that the Amiga is not simply the greatest graphics and sound personal computer yet devised. It is also a very powerful business computer.

To start off, in terms of raw computing power, the Amiga is unsurpassed by any of the leaders in business personal computers. Let's just skip all the lesser machines and get right to the point. What is the premier business sytem? Well, if you have the money, it's the IBM PC-AT, and that's where we will begin.

The AT uses the Intel 80286 16/24 bit microprocessor, and it's fast—running, as I said before, at 6 MHz. That's fast, but not as fast as the Amiga's 7.8 MHz. The fact is that the Amiga runs 30% faster than the AT. And the Amiga uses all those co-processors to handle its graphics, sound, animation and I/O, so its 68000 is free to handle the data calculations, giving faster data handling.

Both computers come with 256K RAM in their minimal configuration, and both can be expanded. The AT can be expanded up to three megabytes of RAM, which is a lot. However, the Amiga is expandable to eight megabytes.

One of the best ways of comparing computers is by looking at the ROM, which is the built-in hardware-based programs that make them run. The AT comes with 64K of ROM, about the same as a Macintosh, and half again as much as the regular IBM PC. However, here again the Amiga far outstrips the AT, because it comes equipped with over 190K of system ROM.

Since we have already discussed the Amiga's graphics, I won't mention them again. But it is worth noting the AT comes with only text graphics in monocolor, unless you shell out hundreds of dollars for an upgrade board. And then you still don't even match the bit-map resolution of the Amiga, which is up to 640x400 with a possible 4,096 colors, as opposed to the AT's 640x350 in 16 colors. And the AT never even dreamed of doing the other graphics the Amiga is capable of. In addition, the Amiga has other things the AT doesn't—like more keys, speech synthesis, state-of-the-art sound, and RS232, serial and parallel ports—that all come as standard features.

There is one place the AT is ahead, however. Its 5.25-inch disk drive stores a whopping 1.2 megabytes—even more than the 880K 3.5-inch floppy on the Amiga. However, that's not much consolation for AT owners, I'm afraid. And to be fair, the AT also comes with a 20-megabyte hard disk, which is essential for real-world business applications. But since Tecmar of Solon, Ohio, has a 20-megabyte 3.5-inch hard drive for the Amiga (about $1,000), even that is no problem.

## IBM Emulation

But hold on, you may say, hardware alone does not a business system make. It takes software to run a business, and the IBM is without argument the leader in business software. True, the Amiga will enter the market with many business programs ready to go, many more than the IBM or Macintosh did at their introduction. Nevertheless, they are dwarfed by the sheer numbers of IBM programs presently available.

So it was with considerable interest that I watched as Bob Pariseau of Amiga held up a 3.5-inch disk and announced that IBM compatibility on the Amiga would be via a software emulation, and not a more costly hardware solution as expected!

This emulator allowed the Amiga to load and run IBM DOS 2.0, which then loaded and ran *Lotus 1-2-3!* So you can continue to use your IBM PC software on the Amiga, if that is one of your criteria for a PC. However, when using the IBM PC emulator, you will find the Amiga is no faster or better than a regular IBM PC. Nevertheless, at a couple of hundred dol-

lars, it's a real cheap way of having your cake and eating it, too.

### Multi-Tasking

However, you may not wish to be bogged down by IBM software on the Amiga, because that software won't take advantage of its unique abilities as a true multi-tasking computer! Multi-tasking is the ability to do more than one thing at a time. And the Amiga can run several programs at once without any apparent slowdown in execution. During the demonstration, I saw it running five different programs, each in a separate window. This is not any software gimmick. It is a concrete example of the engineering excellence of this machine. Its designers developed the hardware with multi-tasking in mind, not as an afterthought. And because of this, it does not slow when you ask it to do many things at once, at least not perceptibly.

With multi-tasking, you can be printing a document, telecommunicating, and designing a business presentation, all at the same time. And the business application software designed specifically for the Amiga is taking advantage of that fact. For example, The Software Group of Ballston Lake, New York, has a series of productivity programs called *Enable. Enable File* is a data base that allows over 256 fields per record, *Enable Calc* is a Lotus-like spreadsheet with macros, over 50 math functions, and the ability to have up to eight active spreadsheet files simultaneously in RAM. *Enable/The Office Manager* is a second-generation integrated package with a word processor, spreadsheet, data base, telecommunications, and graphics. It uses the Amiga's multi-window capabilities, is programmable, and can also transfer files to and from *Lotus 1-2-3, dBase, VisiCalc, Volkswriter* and others. That's quite a lineup!

Chang Laboratories of San Jose, California, has its *Rags to Riches* program line that include Ledger, Payables, and Receivables. Each handles up to 5,000 customers, accounts or vendors, is RAM-based, and claims to be twice as fast as any other accounting package. Tardis Software of Pebble Beach, California, has its *Maximillian* integrated system, a multi-tasking package that has a spreadsheet, word processor, data base, graphics, and communication.

*With multi-tasking, you can be printing a document, telecommunicating, and designing a business presentation.*

### Programmers' Aids

While all these programs are impressive, I am sure of one thing. They are just the beginning of things to come. The Amiga offers things no other computer has, and programmers will be turning out applications that will knock our socks off. And I am happy to report that programmers, too, have a ready assortment of tools available to do just that. For example, included with the Amiga is Microsoft ABasic. According to Microsoft, it is the most powerful implementation of BASIC they have ever developed. It supports all the features of the Amiga, including graphics, windows, animation and sound. It is also, like everything on the Amiga, very fast.

Borland International of Scotts Valley, California, has announced that *Turbo Pascal* will be available for the Amiga. The Lisp Company of Los Gatos, California, has a version of LOGO that has aspects of LISP included. Lattice of Glen Ellyn, Illinois, has several programmers' packages, including C and several C cross-compilers that allow Amiga programs to run on VAX, UNIX and MS-DOS systems. And Metacomco of Monterey, California, has BASIC, Pascal, LISP and a 68000 Assembler/Linker System for program development. So you can see, with powerful programming tools like these already available, the Amiga owner is going to have both high quality and a large quantity of software to choose from.

### Entertainment

For those of you interested in entertainment on the Amiga, have no fear. The best games you have ever seen will soon be flooding the market. Some are already here. Sublogic, of Champaign, Illinois, who is already famous for *Flight Simulator II* (perhaps the best-selling computer game of all time), has *Radar Raiders,* which is a real-time fighter jet simulation in 3D and full color. And the sound is in stereo. Infocom has converted all of their adventure games (*Zork, Enchanter, Hitchhiker's Guide,* ) to Amiga format. Hayden, makers of *Sargon III,* will offer chess on the Amiga—a version with nine levels and a library of 68,000 moves. Electronic Arts is making several of their best games over into Amiga format, and releasing some for the first time. Electronic Arts also has *Return to Atlantis,* a 3D undersea graphic adventure game for the Amiga. And Mindscape of Northbrook, Illinois, has *The Halley Project: A Mission in Our Solar System,* which is a real-time simulation of space flight that teaches facts about gravity, orbits and navigation.

### The Creativity Computer

These are only a few of the applications, languages and entertainment programs demonstrated for us at the Amiga unveiling. By the time you read this, many more products will have been announced, and they will continue to be some of the finest and most innovative programs in the computer market. But with a machine like the Amiga, what else can you expect?

One of the central themes during the Amiga introduction was that this machine will allow the user to expand his or her creativity, by providing more real computer power in ways no one would have thought possible, and without letting the machine place limitations on their ideas. I believe it does that. While watching it being put through its paces, and being astonished time and time again, I began to wonder what heights Edison, Einstein or Goddard could have climbed to with this machine. And it occurred to me that there may be many minds like those out there in the offices, the schools, the farms and the factories just waiting for something to set them free. Perhaps, just perhaps, the waiting is over. C

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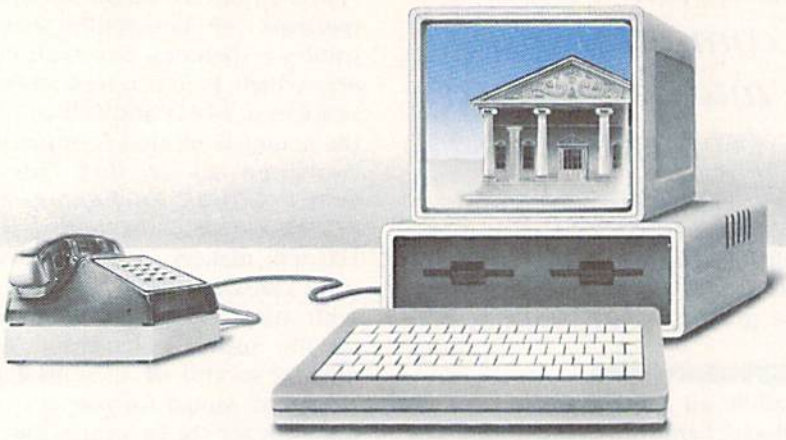

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## SIXTH SENSE

*Continued from Pg. 44*

including scrolling screen one to provide space for new text, switching screens, and saving edited text. The split-screen option provides the user with the ability to compose messages before sending them down-line. This is helpful in conferences or other conversational modes, so your typing is not interspersed with received characters.

Perhaps the most useful functions in *Sixth Sense* are the 16 programmable macros. Each one of the macros allows up to 80 characters for commands. By combining them with delays, wait options, the real-time clock, disk wedge and printer commands, you can perform a number of interesting functions. For instance, you can create a macro that contains all the sign-on procedures for an often-used BBS or on-line data base. By using both auto-dial and your macro, you can have the computer log on for you.

Or, if you really want to get fancy, you can set up a series of commands that will log your computer on in the wee hours of the morning (while most normal people are sleeping, the BBS is probably unoccupied, and the phone cost is low), pick up your mail, leave messages, and store the information obtained. Later, when you are awake, it can then dump the information to your printer (this way you won't wake anyone during the middle of the night).

Microtechnic winds up the guided tour segment of their manual with a list of no less than six different ways to contact them for additional information and user support. Microtechnic Solutions is a family affair, and they are always ready, willing, and able to help anyone who needs technical assistance.

Both the overall packaging and design of the program are superb. Microtechnic Solutions has a real winner with this one. *Sixth Sense* is billed as "the thinking terminal," and it is. It assumes a basic knowledge of telecommunications, and offers the user numerous useful options and abilities.

With *Sixth Sense*, the intermediate user can advance to the higher levels of telecommunications, while the more advanced user will find this program capable of most of the options they need to make full use of their 64. C

# QUINK

*Continued from Pg. 28*

educated adult may have a hard time at the median levels. This wouldn't be a problem if players could each choose a level consistent with their knowledge, but all contestants must play at the same level.

Because it uses a lot of data, there is a long wait while the items in your chosen category load. I think many people may choose the same category repeatedly in order to practice. When you start a new game, the program doesn't compare to see if you're playing the same category. Instead, it just starts reloading the data all over again.

In addition, when it finishes the loading, it goes directly into the game. I know it seems like a contradiction to complain about the game being slow and then want it to pause before starting, but if *Quink* required a keystroke to begin play, you could walk away to get a drink or snack while the clues were loading in. If two players or teams are talking as the game loads, the first player may miss several seconds of his turn before realizing the game has started without him.

Even with its few faults, this is a great game. I especially enjoyed playing it in single player mode to see how high a score I could get. It is both fun and addicting. In addition, because the correct category is available on the screen, it's educational. With it, new words can be added to your vocabulary. Admittedly, discovering that hemichordata is an animal kingdom phyla doesn't give you a complete and certain knowledge of what creatures fall into the phyla, but you at least have a reference point.

After playing this game for a while, you'll probably be able to name seven or eight different varieties of nuts. Maybe you'll add a couple of new constellations to those you already know, or finally remember that anteaters and koalas are marsupials.

But best of all, *Quink* shouldn't become boring. With five progressively difficult levels, there is a lot to learn before this game gets filed away. Everyone has areas they will do well in, and areas they can improve. You may even surprise yourself. I never realized how many breeds of cattle and dairy cows I was familiar with until they showed up in *Quink*. And me, a city girl, at that! C


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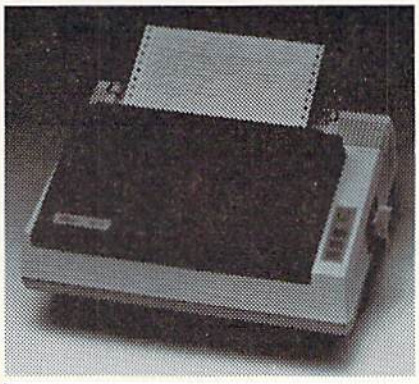

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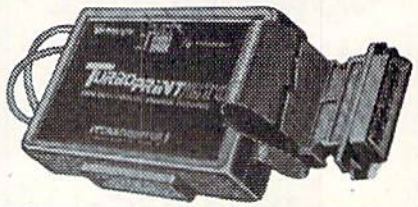

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## REPAIR GUIDE

*Continued from Pg. 62*

how to clean your disk drive heads, how to align and calibrate your 1541, display screens and eye problems, and how to use the latest techniques in thermal imaging and thermography to quickly spot hardware problems.

The book concludes with advanced troubleshooting techniques using specialized electronic test equipment. These often expensive pieces of equipment include: digital meters, logic clips, logic probes, logic pulsers, current tracers, IC testers, oscilloscopes, logic analyzers, signature analyzers, soldering/desoldering irons, and chip extractors. Although (unfortunately) the explanation of the proper use of the above tools is limited, we are left with a deeper understanding of their role in a "hardware approach" troubleshooting methodology. Thanks to the *Commodore 64 Troubleshooting & Repair Guide*, I will never again become intimidated by the innards of the 64 or the alien tools that make up a repairperson's treasure chest.

The book's appendix is well thought out, and contains several nice reference sectons. First, there is a section containing a complete data sheet of 64 specifications. Secondly, there is a 64 chip information chart which contains data concerning chip location, IC number, and description as well as schematic diagrams. Next, there are disassembly/assembly instructions for the 64 and the 1541. We're also shown how to replace surface-mounted components; routine preventive maintenance techniques indexed by day, week, month, every-other month, and year; a summary of cautions and notes; various code conversion charts; a term glossary; and an extremely detailed three-page bibliography containing virtually every book on computer repair that has ever been printed!

All in all, the *Commodore 64 Troubleshooting & Repair Guide* is an extremely valuable book to own. It will not magically transform you into a repair wizard, but it will give you a substantial understanding of the Commodore 64's inner workings and what steps to take if those workings should run afoul. But more than anything else, this valuable book should give all 64 owners the most important thing of all: peace of mind. C

## SPACE SHUTTLE

*Continued from Pg. 20*

makes your radar return sporadic.

If you forgot to close those cargo bay doors, you've already aborted, so don't worry about landing. On the other hand, if you've done everything right to this point, you're on your way to touchdown at Edwards AFB. Soon after passing through the heat zone, you'll see the desert landscape below and your radar display will help line you up with the runway. Lower your landing gear at the proper time, keep your nose up and listen for the solid thud of the front landing gear as you touch down.

And that's all there is to it? Sure. That's a bare outline. There are so many things to keep track of, so many things to do at just the right time, you may find yourself wondering how anyone manages to fly a real Space Shuttle. But it can be mastered, just as the people with the "right stuff" master it in real life.

To help you master it, Activision has provided a toll-free hotline, Mission Control Hotline, that may be called anytime on weekends to help with your questins or to get you out of a tight spot. Touching the Commodore button will freeze the screen while you make the call.

Now, throughout this review, I've avoided referring to *Space Shuttle* as a game. Despite the fact that it has excellent graphics, excellent sound effects, and excellent joystick control, it is not a game. It is an experience.

Programmer Steve Kitchen worked closely with NASA and had access to the shuttle flight simulator to make this simulator as realistic as possible. At one point during the testing of the *Space Shuttle* simulator, one of the testers accidently landed the shuttle by using the steering rockets instead of the main engines.

Informed of this anomaly, the folks at NASA ran the routine through their computers and found that, indeed, it could be done. That routine now resides in the computers of the real Shuttle as an alternative, emergency landing procedure.

We'll never hear a story like that about *Pac Man*. But I think what we will hear is that many Young Astronaut chapters will adopt *Space Shuttle* as a companion piece to *Sky Travel*, using both simulations to give them a leg up on a fascinating future. C

# TALKING TEACHER

*Continued from Pg. 22*

keyboard. Depressing a "D" in this example will cause the friendly (but authoritative) voice from within the computer to respond with, "You're getting warm . . . try to the left."

Once correctly located and pressed, the letter responds with some cute sound effects as it merrily walks across the screen into the countryside. At this point, an acorn, alligator or other such "A" item may be presented with the voice stating that, "Acorn (or whatever) starts with the letter A. Can you find the letter A on the keyboard?" This is another good feature, since it reinforces the learned information. Correctly depressing the "A" key moves the youngster along to the next letter.

Due to the "crash-proof" provisions of *Talking Teacher*, if the desired lesson is to be stopped and another lesson started, the computer must be shut off and the program loaded again. This, too, is a very sensible way of doing things, since the lessons are commensurate with the user's skills; each lesson will take at least a few sittings for the fledgling reader to master completely.

The instructions supplied with *Talking Teacher*, though brief, are complete and easy to understand. Most of the instructions for using the lessons are supplied by the voice within the program itself. Busy moms are sure to love this program, since it allows the child to use it without any parental intervention. Since the instructions and helpful directions are spoken, it isn't necessary for mom to supervise and read the screen prompts for the tyke.

The program is rich in positive feedback. Correct responses during the lessons earn musical salutes, while incorrect choices evoke helpful responses. A demonstration of the right answer encourages better future performances. The program is upbeat, lively and encouraging.

With the combination of so many winning elements in such abundance, *Talking Teacher* moves educational software into new areas previously uncharted. The masterful blending of sonic and visual elements in pleasing proportions results in an outstanding program for early learners. But don't just take my word for it. *Talking Teacher* speaks for itself! C


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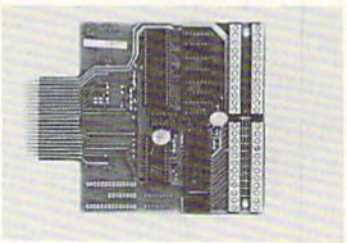

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# THAT DOES NOT COMPUTE

March/April 1985

**Tinkertools**

In the third paragraph of this article, we failed to flag a trademarked brand name. TINKERTOY is a registered trademark of CBS, Inc. and should have been flagged as such in that article.

May/June 1985

**Teletel**

We incorrectly credited Denise Boneau for the photos in this article. Photos were taken by the author, Matthew Kiell.

July/August 1985

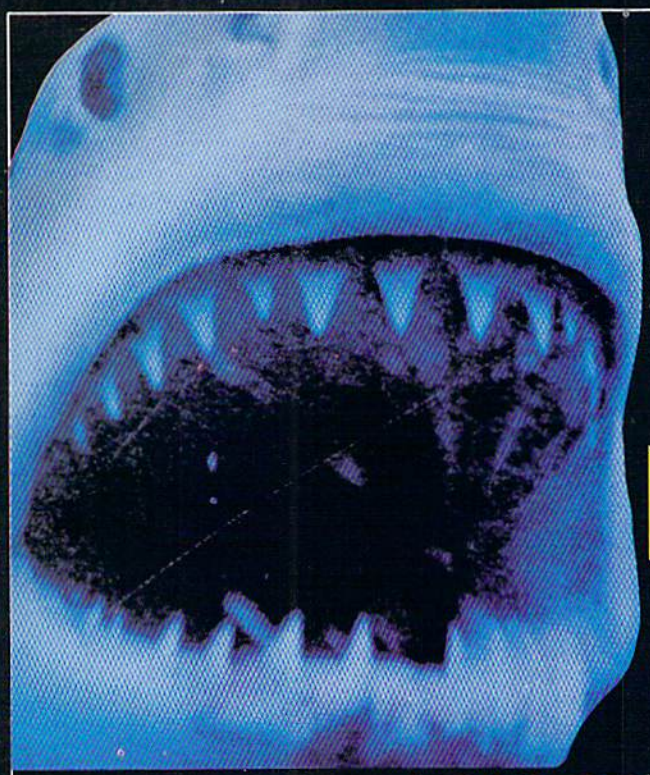
**Chameleon**

When you are using Chameleon in BASIC and want to return to text mode, use this command: SYS BA + 9.

September/October 1985

**Simple Windowing for the Commodore 64**

Although he was credited in the table of contents, the author's byline did not appear on the article itself. The article was written by Bruce Jaeger.



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### THE RESULTS ARE IN

We found the printer which has all the features anyone could want. We've named it the Aprotek Daisy 1120, a real heavy-duty workhorse printing at 20 characters per second. The manufacturer is Olympic Co. Ltd., a highly respected Japanese firm.

### FEATURES GALORE

This printer has it all. To start with, it has a front control panel with indicators for Pitch Selection which allows for 10, 12, or 15 characters per inch (CPI) or Proportional Spacing. There is a Select (Online) button (with indicator) and a Line Feed button. You can also set Top-of-Form or Form Feed with the touch of the TOF button. Other front panel indicators include Power and Alarm.

To load a sheet of paper, simply place it in the feed slot and pull the paper bail lever. The paper feeds automatically to a 1 inch top margin and the carriage aligns to the selected left margin. In this manner, each page can have identical margins.

You can continue to use your Commodore while the Daisy 1120 is printing.

The built in 2K buffer allows a page or two of concurrent printing and use of your computer for the next job. To really take advantage of your printer's optional features, the automatic Cut Sheet Feeder eliminates tiresome paper handling. Also available is the adjustable Tractor Feed option. *Compare our option prices!*

Best of all the Daisy 1120 is quiet: only 57 dB-A (compare with an average of 62-65 dB-A for others).

### COMPLETE COMPATIBILITY

The Daisy 1120 uses industry standard Diablo® compatible printwheels. Scores of typeface styles are available at most computer or stationary stores. You can pop in a 10, 12, 15 pitch or proportional printwheel and use paper as wide as 14". At 15 CPI you can print 165 columns—a must for spreadsheet programs.

The Daisy 1120 uses the Diablo Hytype II® standard ribbon cartridges. Again universally available.

Not only is the hardware completely compatible, the control codes recognized by the Daisy 1120 are Diablo 630® compatible (industry standard). You can take advantage of all the great features of word processing packages and automatically use superscripts, subscripts, automatic underlining, bold-face (shadow printing) and doublestrike.

The printer has a set of rear switches which allow the use of standard ASCII as well as foreign character printwheels. Page length can be set to 8, 11, 12, or 15". The Daisy 1120 can also be switched to add automatic line feed if required.

### THE BEST PART

When pricing a daisy wheel printer with all these features (if you could find one), you would expect to pay $600 or $700 dollars. The options would add much more, but our exhaustive research has paid off for you the Commodore user. We can now offer this printer for only **$353.** Order yours today!

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