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Now, when you upgrade your Commodore™ 64 to a 128, Pocket software helps make it a breeze. The new Pocket 2 software has both 128 and 64 applications on the same disk. So when you buy one you are actually buying two software packages. The cost only \$59.95 (U.S.).

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As a companion to Pocket Writer 2, a Dictionary Disk containing 32,000 words (expandable to 40,000) is available. The cost \$14.95 (U.S.).

For those of you who have already discovered the many benefits of owning Pocket software; we offer all registered owners upgrade Pocket 2 software for only \$19.95 (U.S.) plus 3.00 (U.S.) shipping and handling! Available only by writing to Digital Solutions Inc.

*Commodore's Micro-computers Magazine, independent reviewers, rated the original Pocket Writer 128/64 and Pocket Planner 128/64 software the "Annual Best of 1986" in the productivity category.

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THE
COMMODORE USERS

Ahoy
Access

Clipper

1 0% OFF ANY ACCESS PRODUCT...

This issue we are pleased to have **Access Software** joining us with an offer for the first time. **Access**, as you probably know, makes some very interesting programs, including *Leader Board*, a nifty pro golf simulator, *10th Frame*, a professional bowling simulator, and their latest and greatest product, the *Robotic Workshop*.

When I was three years old, I wanted more than anything else in the world to have an Erector Set. Fortunately for my sons, the *Robotic Workshop* from **Access Software** is a computer-age version of the Erector Set. They have had a fantastic time with this fabulous, space-age learning tool. With hundreds of projects and experiments, the *Robotic Workshop* shows how computers and other devices interact in the real world. Whether you're a beginner dabbling in robotics or an enthusiastic hobbyist, you'll appreciate seeing how this fascinating new field will be interacting with your life in the future. Demonstrating computer-controlled, electro-mechanical operation through experiments with hardware and software, each unit of the *Robotic Workshop* contains the computer interface to connect to your home or personal computer. Also included with the *Workshop* are all motors, sensors, snap-together mechanical parts, software, complete project experiment instructions, and a 136-page spiral-bound manual. For more information on the *Robotic Workshop*, look for **Access Software's** ad in this month's issue of *Ahoy!*

And now, until February 1, 1987, you may purchase the *Robotic Workshop* or any of the other excellent programs from **Access Software** for 10% OFF when you order directly from them. You may order by phone with your VISA or MasterCard by calling 801-298-9077 and mentioning that you saw this offer in the *Ahoy! Access Clipper*. (Please do not call their 800 number to order!) Or, you may use the handy coupon on page 3 of this *Clipper*. But don't wait, because this offer disconnects on February 1, 1987.

Ahoy! Readers:

Happy Holidays! The holidays are upon us and it's time to think about gift giving.

In this issue of our Ahoy! Access Clipper, you'll find lots of great offers to help you with your gift selections for fellow computer enthusiasts.

Of special note this issue are the generous offers from QuantumLink, Value-Soft, Abacus, Chipmunk, Abby's and Alsoft. These kind advertisers have gone out of their way to come up with great offers to tempt you.

So enjoy the holidays and see you in March!

Admirally yours,



Joe Ferguson
Director
Ahoy! Access Club

SUPER SAVINGS ON PAGE THREE

GREAT SAVINGS FROM ABACUS...

Abacus Software is one of the leading marketers of Commodore-compatible software. They're the helpful people who bring you the popular *Super C Language*. *Super C* is **Abacus'** Kernigan and Ritchie implementation of the well-respected C programming language. *Super C* is not just a program, but a complete development system. It includes a full-function source program editor, a fast machine language compiler, and a linker to use the fast graphics and math libraries. *Super C* comes in versions for the C-64 and the C-128, and the C-128 version features RAM disk support.

Abacus has also recently published a new book you should know about. It's called *BASIC 7.0 Internals*, and is writ-

ten for the C-128 owner. With exhaustive, detailed coverage of the inner workings of the C-128's BASIC interpreter, using *BASIC 7.0 Internals* you'll learn how to "hook" into BASIC, perform useful functions with detailed programming utilities, and even delve into the complete ROM listings of *BASIC 7.0*.

This month **Abacus** wants to give you two real good reasons for trying their excellent products, so for a limited time the **Abacus** coupon on page 3 of this *Clipper* is redeemable for \$5 OFF the purchase of any book and \$10 OFF the purchase of any software package, purchased directly from **Abacus**. (This coupon is not good for optional diskettes with book, nor for subset Pascal 64.) You must redeem this coupon through the mail, but don't wait, because this coupon is invalid after February 1, 1987.

2 FOR 1 FROM ALSOFT...In the last *Clipper*, we offered \$10 SAVINGS on Alsoft's valuable *Race Analysis System*. This month, the offer is even better. With this unique handicapping system, you can play the ponies (or the dogs), replacing hours of hand calculations with five minutes of typing. Alsoft's *Race Analysis System* allows you to input cross references from up to 20 races and the program predicts winners, quinellas, perfectas, exactas, trifectas and trifecta boxes. For more information on Alsoft's *Race Analysis System*, look for their ad in this month's issue of *Ahoy!* For a limited time, Alsoft is making you *Ahoy!* readers a fantastic offer: Order one *Race Analysis System* and you'll receive the two-pack ABSOLUTELY FREE. Each order will also include the *Master Analysis Development Package*, enabling you to build, develop and fine tune computerized handicapping systems for all kinds of sporting events. Plus, you'll receive the FREE *Pro Football Handicapping Module*. All of this software is available to you for only \$39.95, and that includes shipping and handling. To place your order, just clip the Alsoft coupon on page 3 of this *Clipper* and send it along with your payment. For faster service, you may call 412-233-4659 and mention that you saw this offer in the *Ahoy! Access Clipper*. All Alsoft programs come with a 30-DAY MONEY-BACK GUARANTEE. (Pennsylvania residents will need to add 6% sales tax.) Place your order TODAY, for this offer expires February 1, 1987.

5 FREE DISKS WITH PURCHASE...

American International Computer Products (AICP) sells hardware and software at good prices, prices worth looking at when you're in the market for Commodore and Commodore-compatible products. We have all been spoiled by the wonderful offers that AICP provides to us *Clipper* after *Clipper*, and this issue is no exception. This issue AICP is holding over their offer of 5 FREE DISKS with the purchase of two 10-packs. The disks are all guaranteed, first quality, single-sided, double-density, and regularly sell for \$7.95/10-pack. That's a 20% SAVINGS—not to be missed! You will need to add \$3.50 to cover shipping and handling. To take advantage of this wonderful offer, simply clip the coupon on page 3 of this *Clipper* and send it along with \$19.30 to AICP. (New York residents will need to add appropriate sales tax.) Or, you may call AICP at 800-634-AICP (in New York State at 718-351-1864), mention you saw this offer in the *Ahoy! Access Clipper*, and order with your credit card. (Credit card orders are subject to a 4% surcharge.) But don't delay—cause this offer disappears on February 1, 1987.

COMMODORE CALENDAR OF EVENTS

Dec. 4-7

The 1986 World of Commodore IV
Toronto Int'l Centre

Hunter
Nichols Inc.

Patricia Mills
(416) 595-5906

January 8-11
(Trade Only)

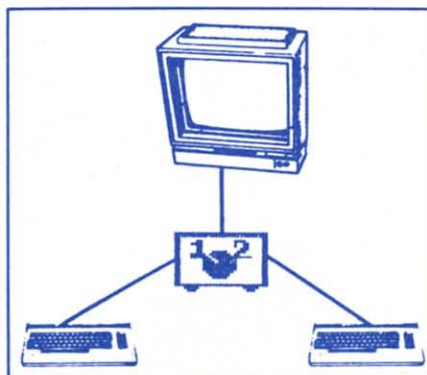
The Consumer Electronics Show
Las Vegas
Convention Center

EIA/Consumer
Electronic Group
Washington, D.C.

Dennis Corcoran
(202) 457-4919

SAVE OVER 15% ON VALUE SOFT'S BLACK BOOK...

There's a company which you should definitely get to know. They advertise in every issue of *Ahoy!*, and have a unique reputation for being THE source for hard- or impossible-to-find products. The



name of the company is **Value-Soft**, and they really listen to their customers. When a number of customers call requesting some device that they do not currently sell, they take the initiative and either find the product so that they may offer it for sale, or they create it. I think this policy is terrific, and so will you when you discover you can't live without some device you need and can't find. One such product created by **Value-Soft** is their new Monitor Switch. This handy device allows you to use the same monitor with two computers as easily as flipping a switch. The Monitor Switch sells for only \$39.95, and I predict that **Value-Soft** will sell a lot of them. For more information on **Value-Soft's** Monitor Switch, look for their ad in this month's issue of *Ahoy!*, and while you're there, check out *The Black Book of C-128*. With over 75 easy-to-read charts and tables, this valuable reference guide has over 260 pages of solid information. **Value-Soft** is so sure that you'll find this reference book indispensable that they offer a 10 DAY MONEY-BACK GUARANTEE. And to make buying *The Black Book of C-128* absolutely irresistible, for a limited time **Value-Soft** is offering \$3 OFF the regular price of \$15.95. Simply clip the coupon on page 3 of this *Clipper* and send it along with your order. You will need to add \$2 for shipping and handling. But don't delay, because this offer switches off February 1, 1987.

FREE GORTOX AND THE MICROCHIPS FROM ABBY'S SOFTWARE...

Abby's Discount Software sells a wide range of Commodore and Commodore-compatible software at good prices. You may see part of their large selection in this issue of *Ahoy!* Their offer is really wonderful: The first 100 lucky *Ahoy!* readers to place a software order for \$20 or more from **Abby's** in the next two months will receive the award-winning educational program *Gortox and the Microchips* ABSOLUTELY FREE. This delightful game is a unique concept for teaching young people to program in BASIC using a space adventure story. You may order from **Abby's Discount Software** by clipping **Abby's** coupon on page 3 of this *Clipper*, or by calling 800-282-0333 (in Ohio, call 513-879-9699) and mentioning that you saw this offer in the *Ahoy! Access Clipper*. But please hurry. You surely don't want to miss out on this great offer.

10% OFF YOUR FIRST ORDER...

With a super selection of Commodore and Commodore-compatible hardware and software at very competitive prices, **Computer Centers of America** deserves your call when you're in the market. This month their ad in *Ahoy!* features a variety of printers and other hardware, plus Epyx games at \$19.95. **Computer Centers of America** wants you to get to know them, because they believe "To know them is to love them." So, with the CCOA coupon on page 3 of this *Clipper*, you may take 10% OFF your first order. You may place your order by telephone. Just call 800-631-1003 or 800-221-2760. In New York State, call 800-548-0009. There's no additional charge for using your credit card, but you must mention that you read about this offer in the *Ahoy! Access Clipper*. Call or write TODAY, because this offer expires February 1, 1987.

Ahoy!

FREE MODEM...
QuantumLink is one of the better bulletin board services for online games, Commodore user group support, software reviews and live conferences. The advertisement on the inside back cover of this issue of *Ahoy!* tells you how you can receive a free QuantumLink membership kit when you sub-



scribe to *Ahoy!*
(Though

you're already an *Ahoy!* subscriber, you can take advantage of this offer by extending your existing subscription.)

Additionally, QuantumLink is making the following offer available only to *Ahoy!* Access Club members: you can get FREE QuantumLink software plus a FREE 300 baud auto-dial modem—when you pay for 4 months of QuantumLink Basic Service (\$9.95/month) at \$39.80. Order your FREE QuantumLink software and FREE 300 baud auto-dial modem by either clipping the coupon on this page or sending your check for \$39.80 to cover your first 4 months of QuantumLink Basic Service to: Quantum Computer Services Inc., 8620 Westwood Center Drive, Vienna, VA 22180—or for faster service, call 1-800-392-8200 and ask for Dept. 25. This offer expires December 1987.

GREAT OFFER FROM CHIPMUNK...

Chipmunk Software sells some neat software through the mail. Their 1541 M.A.S.H. program and a screwdriver will allow you to service your 1541 yourself. With this helpful program you may check and adjust your head alignment, adjust the RPM's, and even inspect disks for errors. And that's only one of Chipmunk's handy programs. See their ad in this month's issue of *Ahoy!* for more valuable Chipmunk programs. Until February 1, 1987, when you purchase any software from Chipmunk, they'll send along a blank diskette ABSOLUTELY FREE. Furthermore, when you order over \$19, you may take 10% OFF the price of the programs. You will need to add \$2 for shipping and handling, on C.O.D. orders only. To order, just clip the coupon on this page of the *Clipper*. For faster service, you may also call 800-331-3428, but be sure to mention that you saw this offer in the *Ahoy! Access Clipper*. Please don't delay, 'cause this offer goes into hibernation forever on February 1, 1987.

10% OFF FROM ACCESS SOFTWARE

Mail to: Access Software
#A 2561 1560 West
Woods Cross, UT 84087
For faster service, call 801-298-8077.
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Yes, Access Systems, I want to SAVE 10% on your excellent programs. My order is enclosed.

2 FOR 1 FROM ALSOFT

Mail to: ALSOFT / 305 Large Avenue
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For faster service, call 412-233-4659.
VISA and MasterCard accepted.

Yes, ALSOFT, I want to get 2 of your Race Analysis Systems for the price of 1. I understand I'll also receive your Master Analysis Development Package, as well as your Pro Football Handicapping Module, ABSOLUTELY FREE. My payment of \$39.95, which includes shipping and handling, is enclosed. My choices of Race Analysis Systems are specified below. Choose two:
☐ Harness ☐ Thoroughbred ☐ Greyhound

FREE PRINTER PAPER WITH PURCHASE FROM WHITE HOUSE

Mail to: White House Computer
P.O. Box 4025
Williamsport, PA 17701
For faster service, call 800-351-3442.
Or in PA, 717-322-7700.

Yes, White House, I want to have 250 sheets of FREE PRINTER PAPER. My printer order is enclosed.

MORE THAN 15% OFF VALUE-SOFT'S BLACK BOOK

Mail to: Value-Soft
9513 S.W. Barbur Blvd., B-56
Portland, OR 97219

Yes, Value-Soft, I want to SAVE \$3 off the regular price of your 260-page Black Book of C-128. My payment of \$14.95 (\$12.95 for the reference guide and \$2 for shipping and handling) is enclosed. I also understand that you're the people to call when I'm looking for that hard-to-find product. Thanks!

BLANK DISKETTE/10% OFF FROM CHIPMUNK

Mail to: Chipmunk Software
Box 463
631 North Cherry
Battle Ground, WA 98604
For faster service, call 800-331-3428,
or in Washington, call 206-687-2343.

Yes, Chipmunk, I want to take advantage of your great offer. Please rush my FREE BLANK DISKETTE. My order is enclosed. I also understand that if I order more than \$19, I may take 10% OFF the price. Thanks!

10% OFF FROM CCOA

Mail to: Computer Centers of America
81 Terminal Drive
Plainview, NY 11803
For faster service, call 800-221-2760
or 800-631-1003. In New York,
call 800-548-0009.

Yes, CCOA, I want to SAVE 10% on my first order. My order is enclosed. Thanks!

FREE GORTX AND THE MICROCHIPS TO FIRST 100 ABBY'S CUSTOMERS

Mail to: Abby's Discount Software
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Fairborn, OH 45324
For faster service, call 800-282-0333.
In Ohio, call 513-879-9699.

Yes, Abby's, I want my FREE PROGRAM, Gortex and the Microchips. My software order of \$20 or more is enclosed. I understand that I'll receive this FREE PROGRAM only if I am one of the first 100 orders you receive. Thanks!

GREAT SAVINGS FROM ABACUS SOFTWARE

Mail to: Abacus Software
P.O. Box 7211
Grand Rapids, MI 49510

Yes, Abacus, I want to SAVE \$5 on the purchase of one of your books and/or SAVE \$10 on the purchase of one of your software packages. I understand this coupon is not valid towards the purchase of Optional Diskettes for Books. My order is enclosed. Thanks so much!

5 FREE DISKS FROM AICP

Mail to:
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Box 1758
Staten Island, NY 10314
For faster service, call 800-634-AICP.
In New York, call 718-351-1864.

Yes, AICP, I want my 5 FREE DISKS. My order for two 10-packs of your disks is enclosed, as is my payment of \$19.30 (\$15.80 for the disks and \$3.50 for shipping and handling). New York residents: Please add appropriate sales tax.

FREE MODEM FROM QUANTUM COMPUTER SERVICES

Mail to:
Quantum Computer Services Inc.
8620 Westwood Center Drive
Vienna, VA 22180
For faster service, call 800-392-8200
and ask for Dept. 25.

Yes, Quantum, I want to receive my FREE MODEM by paying now for 4 months of QuantumLink Basic Service (\$9.95/month). My payment of \$39.80 is enclosed. Thanks!

FREE PAPER WITH PRINTER PURCHASE FROM WHITE HOUSE...

Whether you're in the market for Commodore or Commodore-compatible hardware or software, **White House Computer** is a name worth remembering. They sell computers, modems, drives, interfaces, diskettes, paper, monitors, printers and a variety of name-brand software at very competitive prices. Now and for a limited time, when you buy any printer from **White House**, you'll receive 250 sheets of printer paper **ABSOLUTELY FREE!** Their extensive selection of printers includes Okidata, Legend, Panasonic, Citizen, Star Micronics and Seikosha. For a complete listing of **White House's** printers and other offerings, you'll find the **White House** ad in this month's issue of *Ahoy!* To order, all you have to do is clip the **White House** coupon on page 3 of this *Clipper*, and send it with your order. You may place your order by phoning 800-351-3442, or in Pennsylvania, by calling 717-322-7700. But don't forget to mention you saw this offer in the *Ahoy! Access Clipper*. For more details on the credit card surcharge and cost of shipping and handling, see the fine print in the **White House** ad. Don't wait. This **FREE PAPER OFFER** runs out on February 1, 1987.



The *Ahoy! Access Clipper* is published bimonthly by *Ahoy! magazine* and sent free to selected subscribers of *Ahoy! Ahoy!* is a monthly publication of *Ion International Inc.* The cost of a one-year subscription is \$21.95; two years are \$41.75. Inquiries regarding subscriptions to the magazine should be addressed to *Ion International Inc.*, 45 West 34th Street, Suite 407, New York, New York 10001.

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Ahoy!

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*Includes program: *Pointer Printer* (for the C-128)

**Includes program: *Cadet's DOS 1.2* (for the C-128)

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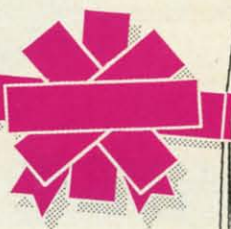
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Begin your Holidays with a free gift* from Abacus



Commodore 128
Reference Card



Convenient reference card lists all the BASIC 7.0 commands with their syntax and explanation, over 35 important zero-page locations, escape sequences, monitor commands. Great to keep readily available for your C-128.

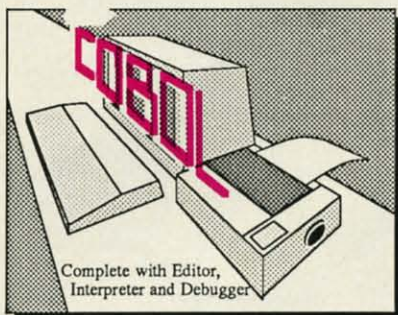


Let your '64 speak Pascal

Super Pascal Compiler
Not just a compiler, but a complete system for developing applications in Pascal—with graphics. Extensive editor with search, replace, renumber, etc. Standard J & W compiler that generates machine code. High-speed disk access. 48K RAM is available. If you want to learn Pascal or to develop software using the best tools available—**Super Pascal** is your first choice. **C-64 \$59.95**

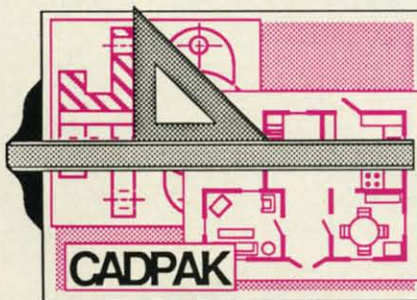
Simply fill out the attached coupon and return it to one of our participating dealers for your **free Commodore 128™ Reference Card** (Retail value \$2.95). And while you're there, take a look at our complete line of top-notch software. No purchase necessary.

* Available at participating dealers



Complete with Editor,
Interpreter and Debugger

COBOL
Now you can learn COBOL, the most widely used commercial programming language, on your 128 or 64. COBOL Compiler package comes complete with syntax-checking editor, interpreter and symbolic debugging aids. New '128 version works with 40/80 column monitors and is quicker than the '64 version. **C-128 \$59.95**
C-64 \$39.95



Cadpak
Easy-to-use interactive drawing package for accurate graphic designs. Dimensioning features to create exact scaled output to all major dot-matrix printers. Input via keyboard or lightpen. Two graphic screens for COPYing from one to the other. DRAW, BOX, ARC, ELLIPSE, etc. available. Define your own library of symbols/objects—store up to 104 separate objects. **C-128 \$59.95**
C-64 \$39.95



Learn the the language of
the 80's and beyond
on your C-128 and C-64

Super C Compiler
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VIEW FROM THE BRIDGE

When Michael Schneider launched *Ahoy!* into the choppy waters of computer publishing in January 1984, he knew what the odds were against being in business a year later. He proceeded anyway, guided by two deeply held beliefs: one, that the computing public would support a magazine that consistently offered the best selection of programs and features in its market; and two, that the Commodore 64 would take over the world. And because *Ahoy!*'s publisher was right on both counts, this month we and our readers mark a special occasion together—the third anniversary of the premier of *Ahoy!*

One way we're celebrating is by going online with QuantumLink, the leading bulletin board service for Commodore users. *Ahoy!*'s regular BBS will be available to multiuser access on Q-Link, as it has been on PlayNET for the past year. Additionally, our editors and writers will host a monthly forum—check with Q-Link for dates and times.

The advertisement on the inside back cover of this issue will tell you how to receive a QuantumLink starter kit free when you subscribe to *Ahoy!* Or if you prefer, you can receive everything you need to get online with QuantumLink with this month's *Ahoy! Disk*, including a manual and all required software. Instructions on ordering the *Ahoy! Disk* can be found on page 79.

We hasten to add that we will continue to honor the similar offer for a PlayNET membership kit, extended last issue, through December 31, 1986.

Among the special features in this third anniversary issue:

- In a tremendous show of programming power, Carlos de la Guardia has added 31 new commands to BASIC 2.0—and christened his upgrade *BASIC Ahoy!* We welcome future program submissions utilizing this versatile new language. (Turn to page 48.)

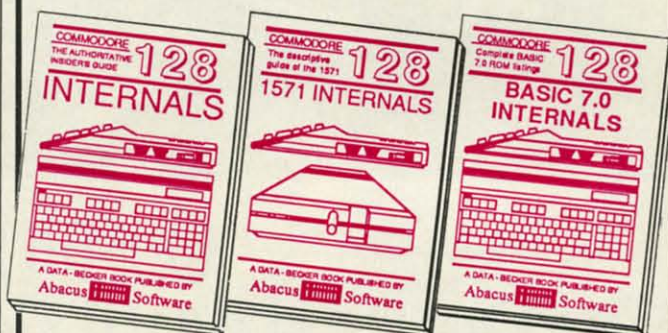
- Back in basic BASIC, Buck Childress continues to improve the quality of your programming life with *Perma-Line*, which will render program lines of your choice delete-proof. (Turn to page 78.)

- Senior Editor Tim Little has answered a need often expressed by our readers: for a utility that will LIST otherwise unLISTable programs. *Lixer* will print a disassembly, BASIC LIST, hex dump, or simple PETSCII dump (with control characters translated), without loading the program into memory. Let us know if you find any limitations on its effectiveness—we've been unable to! (Turn to page 98.)

- Cleve Blakemore's games continue to be not just entertaining in their own right, but an education in them-

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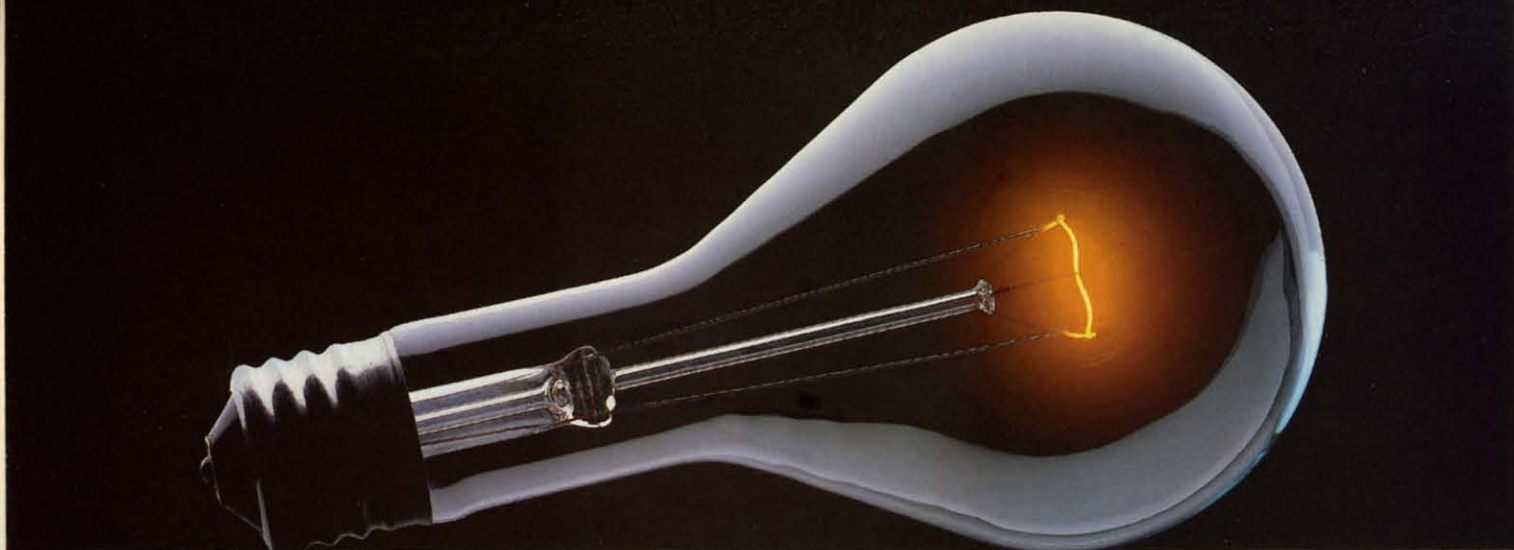
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selves. This month's *Catacombs* is a study in the use of the 64's neglected extended background color mode. (Turn to page 89.) And *Dark Fortress* utilizes an ignored ability of the C-128: to accommodate a game designed for two separate screens, each controlled by one player and hidden from the other. (Turn to page 99.)

- Speaking of *Screens*, Marie E. Coon's program of the same name will allow C-64 programmers to write, store, and call up screens full of information in their BASIC or machine language programs. (Turn to page 82.)

- If you can no longer find a *Gyruss* game to eat your quarters, Sean Wagle's *Vortex* should provide a comparably dizzying outer space experience for just the price of electricity. (Turn to page 20.)

- *Hanger 14* is the danger-enmeshed destination of a robot who is searching for a hijacked cargo rocket. (Yes, we know that the type of hanger used to store aircraft is spelled with an "a" instead of an "e." But by the next century, many of the "a" 's in the lexicon will have been replaced by "e" 's. Or so claim our proofreaders who didn't catch the error until it was too late.) (Turn to page 23.)

- *Starfighter* can hardly claim originality of design among its merits, but the smoothness and quickness of its gameplay are sure to repay your keypunching efforts. (Turn to page 25.)

- Though he's been pulling rabbits out of the C-64 and C-128 for the entire three-year run of *Ahoy!*, Dale Rupert's column on *Basic Magic* describes a bit of prefabricated prestidigitation: the 128's built-in monitor. This month's *Rupert Report* reveals and analyzes this particular magician's secrets. (Turn to page 32.)

- In answer to your requests for more of the most detailed *Reviews* in the Commodore market, this month's section swells to four in number. Along with Morton Kevelson's searching, searing examination of the *1571 Clone Machine* and *Kracker Jax* copy utilities, Ted Salamone reports on *Gnome Kit* and the *B.E.S.T. Project Planner/Reporter*. (Turn to page 60.)

- In the months ahead, you can look to our *Entertainment Software Section* for reviews of 1987's best, worst, and most middling game releases. But for this month, let's look back at 1986, as Arnie Katz and the industry's most experienced game reviewers judge *The Year's Best Entertainment*. Also featured in this issue are full-length reviews of *Battlefront*, *The Financial Time Machine*, *Breakers*, the *Top Gunner Collection*, *The Never Ending Story*, and *Gettysburg: The Turning Point*. (Turn to page 41.)

You can look forward to a great deal more in the months ahead as well, including expanded Amiga coverage and new regular features addressing the most current needs of C-64 and 128 users. We hope you'll continue to write, call, or visit to tell us how we can make your favorite Commodore magazine better. Then maybe by the time we reach our fourth anniversary, we can start taking it a little easier. (Only joking. Before Michael Schneider allowed that to happen, he'd launch us into the choppy waters mentioned above!) —David Allikas

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AHOY! 7

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GAME RELEASES

GBA Championship Basketball: *Two-on-Two* has been adapted for the Amiga, presumably with enhanced graphics and sound.

Gamestar, 415-960-0410 (see address list, page 14).

Activision will release *Howard the Duck: Adventure on Volcano Island* (a decision clearly reached before movie reviewers across the country shot the fowl from the sky).

Derived from the ancient oriental game of Mah Jongg, *Shanghai* consists of 144 tiles in seven suits, stacked in a five-level dragon-shaped pyramid. Tiles are removed in pairs until none remain or no additional moves can be made. Options include solitaire play, head-to-head matches against the clock, and multiplayer tournaments. Price is \$34.95 for the C-64 version, \$44.95 for the Amiga. A demo disk is available from Activision for \$3.00.

Activision, 415-960-0410 (see address list, page 14).

Two C-64 games from Electronic Arts:

Marble Madness (\$29.95), while several notches below the must-see-to-believe Amiga version, offers similar graphics and gameplay, plus a new Secret Level. Each of the six playfield raceways has its own "personality" and set of obstacles and creatures to contend with.

A combination card game and computer game, *Robot Rascals* (\$39.95) sends two to four players on a scavenger hunt. Onscreen robots travel into forests, mountains, and swamps to locate items represented to cards players draw, such as the Digital Donut and the Transistor Taco.

Electronic Arts, 415-571-7171 (see



Dan Bunten and Alan Watson, proud papas of EA's Robot Rascals, a hybrid computer/card game centering around an onscreen scavenger hunt. READER SERVICE NO. 130

address list, page 14).

For the C-128 in—get this—C-128 mode, *The Great War* (\$29.95) lets one or two players maneuver more than 400 corps/division sized units representing the armies of 17 countries over a map of 1914 Europe. The two-player version spans the entire war from 1914-18 in two-week turns, taking over 100 hours to complete.

Free Spirit Software, Inc., 312-352-7323 (see address list, page 14).

Like the board game of the same name, *Dr. Ruth's Computer Game of Good Sex* (\$29.95) requires 1 to 7 players to answer questions about love, relationships, and sex. Correct answers score points and let players advance to the bonus round called the Sexual Clinic, where they hear actual case histories as told to Dr. Ruth and select the correct response from four choices. Over 800 questions are included.

The Avalon Hill Game Company, 301-254-5300 (see address list, page 14).

Pirate (\$5.99) requires the player to find the answers to five questions hidden on the disk within the tracks and sectors, using sector editors, ML monitors, and anything else he thinks will help. For a limited time, a copy

of *Aerospace Trivia* will be sent free upon verification of correct answers.

Brian Shine Software, 818-915-4095 (see address list, page 14).

An animated game show for the C-64, *Fun Wheel* includes a Puzzle Maker program with review and editing capabilities. Special price for *Ahoy!* readers is \$8.00 postpaid.

Data Heaven (see address list, page 14).

The *1985 Baseball Data Disk* and *Computer Quarterback 85 Data Disk* are available for use with SSI's C-64 sports contests, containing stats for all 1985 teams and a stat compiler for recording performance statistics of games played. Price is \$15.00 each.

Strategic Simulations, Inc., 415-964-1353 (see address list, page 14).

Bridgebrain, a contract bridge simulation for the 64, lets the player choose from five options: to play random deals as the declarer, to play a complete simulation of contract bridge in which he bids and plays each deal as South, to enter a deal manually, to enter a deal number to generate a deal, and a two-player option in which one player is North/South and the other East/West, with the program playing partner for both. Bidding is in accordance with the

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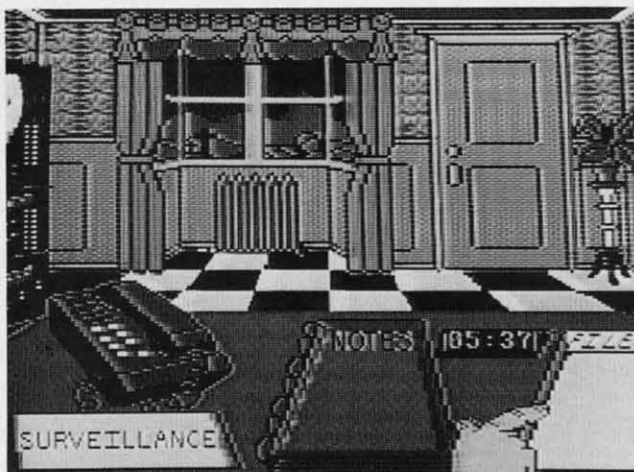
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Reminiscent of an Agatha Christie drama, Killed Until Dead features over 20 plots and an unusual challenge: to prevent a murder, not solve one.
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Standard American System, and is directed toward making game unless a slam seems possible. Price is \$40 for tape or disk.

George Bodnar (see address list, page 14).

An interactive text and graphics murder mystery, *Killed Until Dead* (\$29.95) features five characters, one of whom attempts the perfect murder. The player becomes Hercule Holmes, the master sleuth who must solve the mystery before the murder hour of midnight. Operating from his desk, Holmes accesses information

in three ways: via character profiles, a video-telephone, and a surveillance machine. While collecting clues, notes are logged in the detective journal, from which they can be accessed at any time.

Accolade Inc., 408-446-5757 (see address list, page 14).

Pilgrim's Progress (\$29.95), a C-64 text adventure utilizing a sophisticated parser and occupying an entire side of a disk, requires about 80 hours to complete but is simple enough to be enjoyed by beginners (just like the classic tale upon which

it is based).

Chipmunk Software, 1-800-331-3428 (see address list, page 14).

C-128 ACCOUNTING

Cash In-Cash Out (\$69.95), an accounting system for the C-128, records sales and expenses when checks are actually written or received (cash basis method) rather than when sales are ordered or expenses incurred (accrual method). Included are a Customizing Module (tailor information like tax rates, expense accounts, and payroll deductions), Sales Module (tracks up to nine categories), Disbursement Module (handles up to 200 accounts and produces two separate expense reports), Payroll Module (includes federal tax tables for up to 75 employees, four changing tax rates, seven special deductions, and facilities for printing payroll checks), Financial Reports Module (produces quarterly, yearly, or interim reports), Graphics Module (graphs any or all sales and disbursements on screen or printer), and Financial Tool Box (including break even analysis, depreciation, amortization, mortgage compensation, and more.)

Microsphere Corporation, 1-800-521-2488; in PA call collect 412-838-1166 (see address list, page 14).

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Broderbund Software, 415-479-1700 (see address list, page 14).

DELUXE VIDEO USER'S GUIDE

For use with Electronic Arts' desk-

top video program, *The Deluxe Video Advanced User's Guide* provides 70 pages of techniques and tips, including step-by-step tutorials on making animatics, commercials, presentations, and interactive videos. The booklet will be sent free to *Deluxe-Video* owners who send in the product registration card included in the package.

Electronic Arts, 415-571-7171 (see address list, page 14).

DISK CATALOGER

The newly enhanced *SuperCat Disk Cataloging System* (\$29.95) will now allow two-drive users to double the program's original capacity to a maximum of 1280 disk directories, or 10,000 titles. Additionally, new ML routines provide fast sorts (1000 titles in eight seconds) and eliminate garbage collection delays. Automatic title entry and cross-reference capabilities are provided for. Multicolumn reports (output to printer or screen) provide listings by disk and program title. For the C-64 and one or two drives; backup copy included.

Cornucopia Software, 503-284-8557 (see address list, page 14).

PLUS/4 SOFTWARE

Chipmunk Software has adapted the following C-64 programs to the Plus/4:

Disk Tracker allows the user to display any directory onscreen and store up to 1800 directories on a single disk. Price is \$19.95.

Check Tracker (\$24.95), designed to manage a simple banking account or double entry bookkeeping system, can manage T accounts and the budgeting of up to 600 checks per month. An entire year's records can be stored on a single disk.

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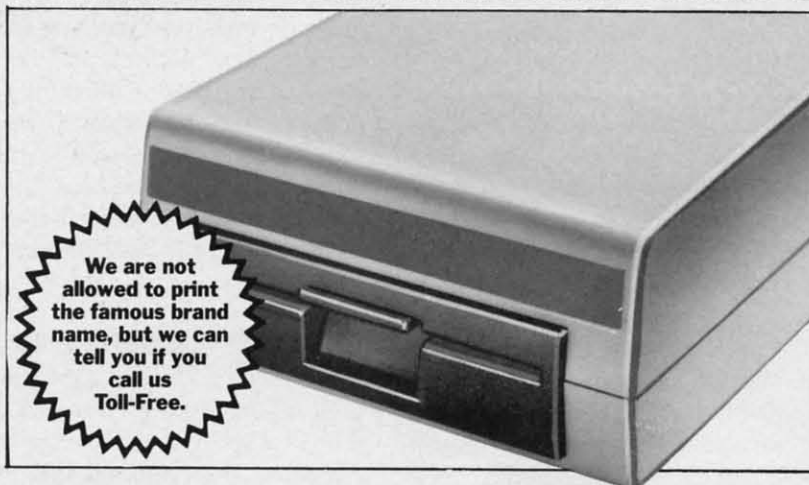
Also scheduled for conversion are *Bible Trivia* and *Adventure Pac*, which will consist of at least six

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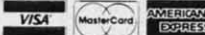
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Chipmunk Software, 1-800-331-3428; in WA 687-2343 (see address list, page 14).

COLLEGE KNOWLEDGE

The Perfect College (\$34.95) lets high school students research 1650 four-year colleges and universities in five areas: Basics (location, size, setting, cost, etc.), Competitiveness (test scores, GPA, percentage accepted, and overall), Academics, Student Life, and Admissions. Using the program will also teach students how to operate a database. A backup disk and user's guide are included.

Mindscape's entire product line is profiled in their free 20-page fall catalog, featuring a Word-Find contest open to all educators and offering prizes of up to \$500 worth of software.

Mindscape Inc., 1-800-221-9884; in IL 1-800-942-7315 (see address list, page 14).

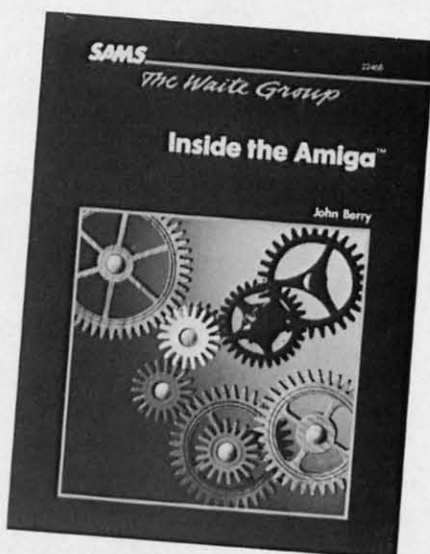
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Access Associates, 408-727-0256 (see address list, page 14).

AMIGA BBS

The North American Amiga Users Group (NAAUG) has established a 24-hour BBS, The LifeSaver, to provide a central point for the collection and distribution of public domain and user-supported Amiga software, as well as a place for users to



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share problems, ideas, and tips and to buy and sell equipment. Annual group membership is \$25, which includes a subscription to the club's AmigaHelp newsletter, a disk of public domain software, free classified ads, and participation in a buying co-op. Limited access to the board will be granted to non-members. The board's number is 814-339-6042.

NAAUG, 814-237-5511 after 4 p.m. (see address list, page 14).

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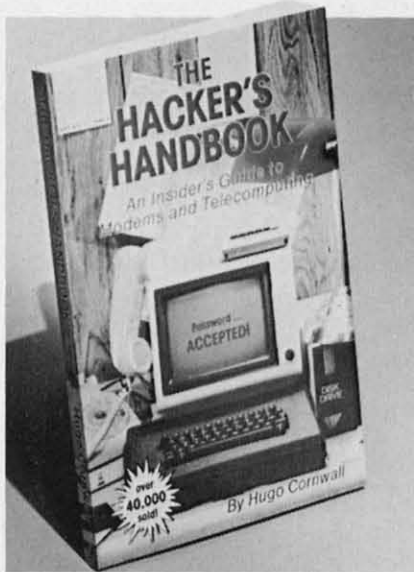
CompuServe, 614-457-8600 (see address list, page 14).

BOOKS

Two tomes from Abacus:

GEOS—Inside and Out (\$19.95) includes introductory material about GEOS, the Desktop, GEOWRITE and GEOPAINT, a large selection of tricks and tips, and material on program internals, as well as corrections of some problems found in the early release of GEOS.

BASIC 7.0 Internals (\$24.95), a



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companion volume and follow-up to *C-128 Internals*, offers 600 pages of coverage of the BASIC 7.0 interpreter.

Abacus Software, 616-241-5510 (see address list, page 14).

Inside the Amiga (\$22.95), written for the experienced computer user who wants to use the C language to tap the Amiga's powerful programming features, reviews the language itself and covers Amiga data structures, interrupt handling, playfield graphics, animation, libraries and devices, and the computer's sound system.

Howard W. Sams & Co., 1-800-428-SAMS (see address list, page 14).

Two releases from TAB Books:

1001 Things to Do with Your Amiga details such uses as household record-keeping and budgeting, investment analysis, business management, game playing, and scientific and educational utilization. A selection of programs is included. Price of the 208-page paperback is \$12.95; with disk \$32.95.

Commodore 128 BASIC: Programming Techniques (\$12.95 paperback, \$18.95 hardbound) runs through a variety of commands and techniques in storing and retrieving data, telephone communications, programming sound and graphics, and more. Over

50 type-in programs are included.

TAB Books Inc., 717-794-2191 (see address list, page 14).

The following from E. Arthur Brown Company:

The expanded second edition of *The Hacker's Handbook* (\$12.95) goes into detail on how these individuals break into computer systems, covering everything from breaking passwords to short wave radio hacking. Purely an expose, you understand.

Free for the asking, *The Computer Hobbyist Catalog* offers software

and hardware for the C-64 and assorted other computers.

E. Arthur Brown Company, 612-762-8847 (see address list, page 14).

TAX MASTER UPDATE

The 1986 version of *Tax Master* for the C-64 (\$30.00) guides the user through the preparation of Forms 1040 and 4562 (Depreciation) and Schedules A (Itemized Deductions), B (Interest and Dividends), C (Small Business), D (Capital Gain/Loss), E (Rent/Royalty Income/Loss), and F (Farm Income/Loss). The program

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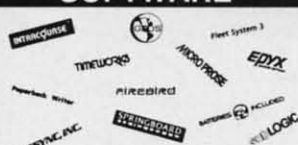
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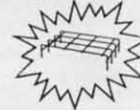
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Master Software, 301-922-2962 (see address list, below).

BIG BLUE TO BIG C

Particularly useful for persons who use IBM equipment at work and a C-128 at home, *The Big Blue Reader* (\$29.95) allows C-128 owners to transfer word processing and ASCII files generated on most IBM-compatible software to Commodore DOS files (at 12,000 bytes per minute), and vice versa (at 20,000 bytes per minute). The user is offered the option of translating MS DOS standard ASCII to Commodore ASCII and vice versa, avoiding the problems of reversed capitals and lowercase let-

ters that usually result from ASCII transfers between the formats.

S.O.G.W.A.P. Software, Inc., 213-822-1138 (see address list, below).

MODULA-2 FOR AMIGA

Pecan Software is distributing the Modula-2 language for use on the Amiga, along with a forthcoming series of developmental tools. Because of the language's modularity, Pecan deems it well-suited to large-scale software development, as well as an excellent alternative to the C language. Price is \$79.95.

Pecan Software Systems, Inc., 718-851-3100 (see address list, below).

VOICE MASTER EDITOR

Designed for use with Covox's Voice Master speech synthesizer, *Speech Construction Set* (\$49.95) permits the editing and refining of digitally encoded speech in software. Via hi-res graphic screens and a "cut and paste" process, the 64 user modifies the elements of the sonic waveform which constitutes the speech.

Covox, 503-342-1271 (see address list, below)
Continued on page 145

Companies Mentioned in Scuttlebutt

Abacus Software
P.O. Box 7219
Grand Rapids, MI 49510
Phone: 616-241-5510

Access Associates
491 Aldo Avenue
Santa Clara, CA 95054
Phone: 408-727-0256

Accolade
20833 Stevens Creek Blvd.
Cupertino, CA 95014
Phone: 408-446-5757

Activision, Inc.
2350 Bayshore Parkway
Mountain View, CA 94043
Phone: 415-960-0410

The Avalon Hill Game Co.
Microcomputer Games Div.
4517 Harford Road
Baltimore, MD 21214
Phone: 301-254-9200

Batteries Included
30 Mural Street
Richmond Hill, Ontario
L4B 1B5 Canada
Phone: 416-881-9941

Brian Shine Software
1410 N. Grand Ave. #C
Covina, CA 91724
Phone: 818-915-4095

Broderbund Software, Inc.
17 Paul Drive
San Rafael, CA 94903-2101
Phone: 415-479-1170

Chipmunk Software
Box 463
Battleground, WA 98604
Phone: 1-800-331-3428

CompuServe
5000 Arlington Centre Blvd.
Columbus, OH 43220
Phone: 614-457-8600

Cornucopia Software
P.O. Box 2638
Portland, OR 97208-2638
Phone: 503-284-8557

Covox, Inc.
675-D Conger St.
Eugene, OR 97402
Phone: 503-342-1271

Data Heaven
6118 S. Briar Bayou
Houston, TX 77072

Digital Engineering and Design
2718 S.W. Kelly, Suite C165
Portland, OR 97201
Phone: 503-245-1503

E. Arthur Brown Company
3404 Pawnee Drive
Alexandria, MN 56308
Phone: 612-762-8847

Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
Phone: 415-571-7171

Free Spirit Software, Inc.
538 S. Edgewood
LaGrange, IL 60525
Phone: 312-352-7323

Gamestar, Inc.
(See Activision)

George Bodnar
1134 Harvard Cr.
Pittsburgh, PA 15212

Great American Software
Box 910
Amherst, NH 03031
Phone: 1-800-528-5015
or 603-889-5400

Howard W. Sams & Co.
4300 W. 62nd Street
Indianapolis, IN 46268
Phone: 317-298-5400

John 1:1 Graphics
P.O. Box 316
Bellflower, CA 90706
Phone: 213-422-5307 (modem)

Kledzik Company
25605 Cielo Court
Valencia, CA 91355
Phone: 805-254-4729

Kyan Software, Inc.
1850 Union Street, #183
San Francisco, CA 94123
Phone: 415-626-2080

Master Software
6 Hillery Court
Randallstown, MD 21133
Phone: 301-922-2962

Microsphere Corporation
Plymouth Center
521 Plymouth Street
Greensburg, PA 15601
Phone: 1-800-521-2488; in PA call collect 412-838-1166

Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062
Phone: 312-480-7667

NAAUG
Box 376
Lemont, PA 16851
Phone: 814-237-5511 (4-9)

Pecan Software Systems
1410 39th Street
Brooklyn, NY 11218
Phone: 718-851-3100

Scriptural Software Unltd.
2613 Via Vera
Carlsbad, CA 92008
Phone: 619-434-2121

Softsync, Inc.
162 Madison Avenue
New York, NY 10016
Phone: 212-685-2080

S.O.G.W.A.P. Software
611 Boccaccio Avenue
Venice, CA 90291
Phone: 213-822-1138

Springboard Software, Inc.
7808 Creekridge Circle
Minneapolis, MN 55435

Strategic Simulations, Inc.
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SCIENTISTS A DISCOVER NEW

When we started our company on the west coast, people thought we were a little spaced out. So you can imagine their reactions when we announced we'd discovered a new universe.

People laughed. People scoffed. And they really freaked out when we told them where we'd found it:

Inside a Commodore 64.

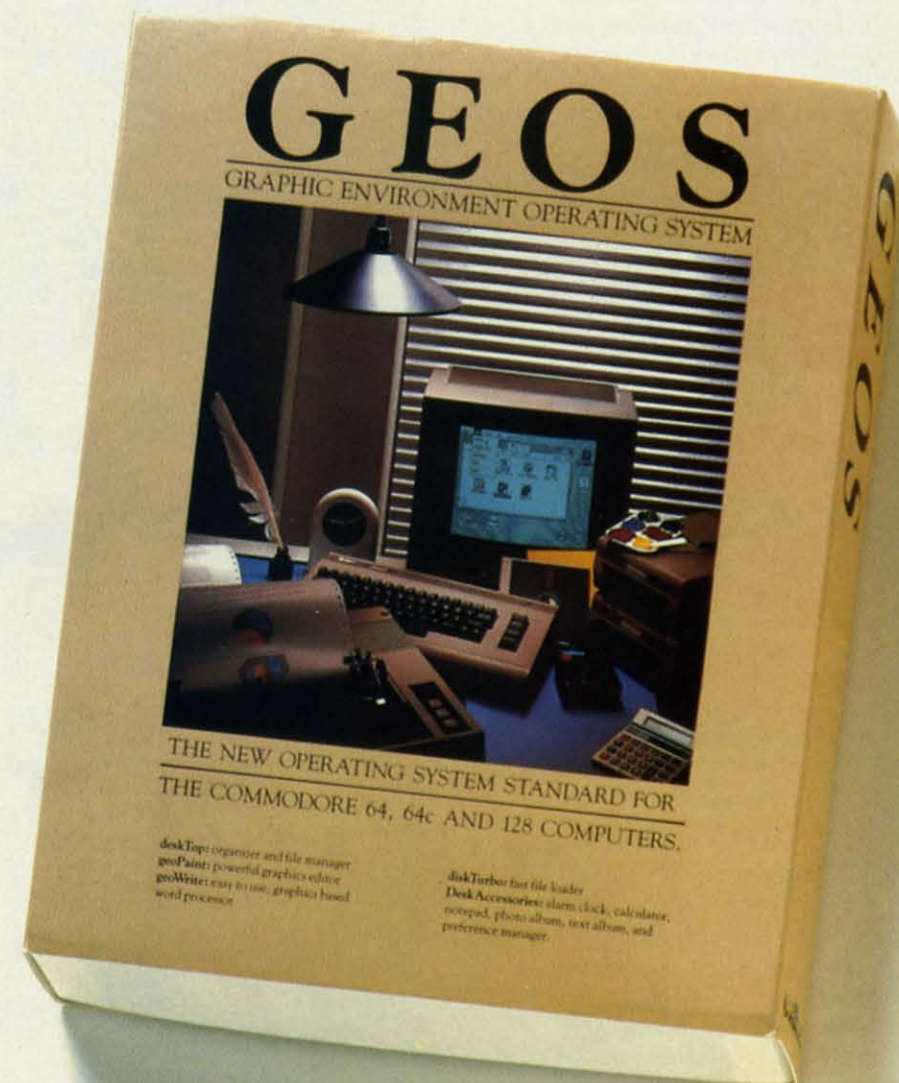
It's called GEOS. And it turns any Commodore into a powerful PC that holds its own against any computer, no matter what kind of fruit it was named after.

GEOS: The superior intelligence. Of course, we always knew Commodores possessed superior brains. It just took GEOS to discover them.

You see, GEOS opens your Commodore to a huge universe that can hold an infinite number of applications. Which means that GEOS can do just about anything the expensive PC's can do, including one thing they can't:

Add even more GEOS applications that are being developed even as you read this.

Increase your speed to warp factor 7. The first thing you notice with GEOS is how its diskTurbo speeds up your Commodore's disk loading and storing time.



Not twice or three times as fast. But five to seven times faster than normal. Which lets you streak through files and documents at what seems like warp speed.

And that saves you endless time.

Every universe comes complete with a desk. The way to keep order in our universe is with the GEOS Desktop. It's just like your desk at home, only without the coffee stains.

The Desktop keeps your art and documents filed, and comes

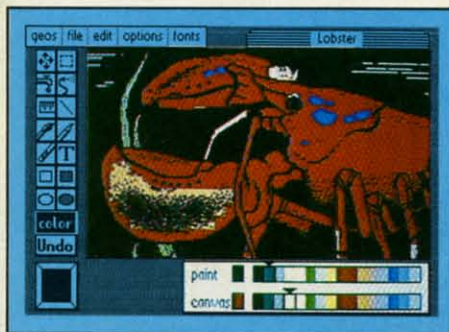
AT BERKELEY NEW UNIVERSE.

with all the accessories you need to keep you organized:

An alarm clock keeps you punctual. A notepad keeps your memos. And a calculator keeps your accountant honest.

How to communicate with a new universe. With geoWrite, you can rearrange your written words. Move blocks of copy. Cut and paste. And even display your text in fonts of different styles and sizes, right on the screen.

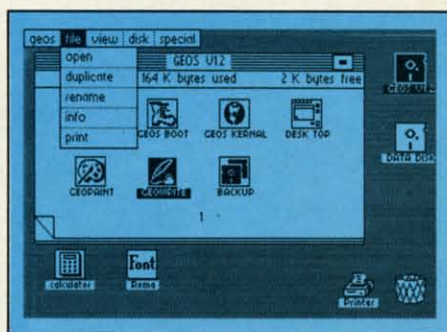
With geoPaint, you become a Michelangelo with a mouse.



Sketching and painting with all kinds of colors, textures and patterns.

You can invert, mirror and rotate images. Insert them into your geoWrite documents. And save them in your GEOS Photo Album for use later.

Finding your way through the universe. The most difficult



thing about a new universe is finding your way around. But with GEOS, you only need to remember two things:

Point and click.

When GEOS offers you options, you just point to your answers and click your mouse or joystick.

You want to draw? Point and click.

You want to write? Point and click.

You want to fill in that obtuse rhomboid with an air-brushed geometric pattern in a lighter shade of pink? Point and click.

Easy, huh? And in case you ever do make a mistake, GEOS backs you up with an "Undo" feature that undoes the very last command you entered.

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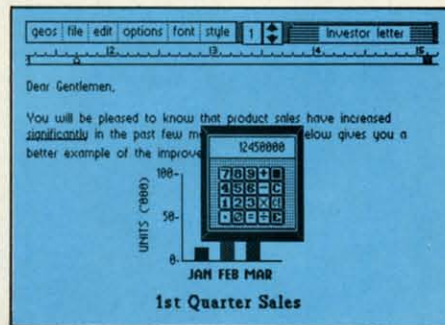
The brightest minds are working at Berkeley.

Running out of space.

With GEOS, that's hardly likely. Because there's endless space in the universe for new applications.

Unfortunately, there's only so much space in this ad.

So zip down to your nearest software dealer. Tell him you want to explore the new universe in your Commodore.



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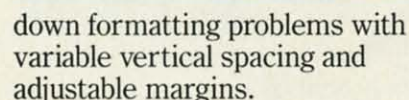
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Reader Service No. 102

Whether you're building an argument or just hammering out a memo, any project looks better when you put it together in Writer's Workshop. The supercharger that powers your GEOS-equipped Commodore through even the most wrenching assignments.

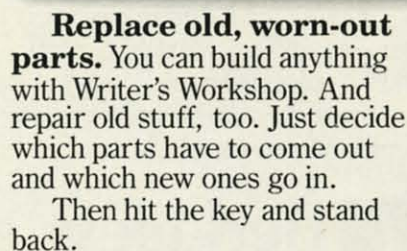
Sharpen your skills. The first thing to do in the Workshop is plug into geoWrite 2.0, which contains all the brand new tools you need to hone any rough concept into a well-crafted document.

You get headers. Footers. Subscripts and superscripts. You can center your text. Right justify. Full justify. And nail



The Workshop cuts down on your manual labor, too. With one-stroke, "shortcut" keyboard commands. They keep your hands off the mouse so you can keep your mind on your work.

In fact, there's a complete set of heavy-duty accessories that not only strengthen your writing, but reinforce its structure, as well.



Instantly, the "search and replace" drills through your old



NGEST CASES TH A WORKSHOP.

THE EASTER BUNNY: Rodent of Reality or Man-Made Myth?

The conclusion is not certain, but mounting scientific evidence now indicates that the egg-bearing Easter Bunny¹ we all loved as children may indeed be as real as we had hoped.

Although traditionally reclusive, the bashful bunny has been sighted with increasing frequency₂ over the past five years. As illustrated in Figure 6, the annual number of sightings has steadily grown from a low of 1,876 in 1982 to over 5,346 so far this year.

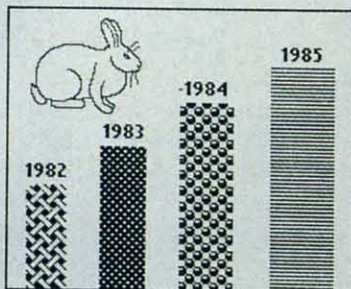


Figure 6: Increased sightings, 1982 to present.



Figure 4: Evidence submitted by Dr. Dougherty.



1. The Easter Bunny, depicted by composite sketch.

NEW EVIDENCE ABOUNDS



"The problem isn't so much the bunny, as it is the eyewitnesses," adds Dr. Dougherty. "Many of them are unreliable, with nothing to show for their claims except for big baskets of chocolate eggs³, leading us to believe we're not dealing with a rabbit as such, but perhaps an Easter Chicken."

At first, the sightings were attributed to crackpots who saw The Easter Bunny as part of a religious ritual. However, since The Easter Bunny has been seen by adults as well as children, scientists have become less skeptical.

In fact, as Dr. Llevano points out, "The Easter Bunny must be taken seriously by everyone from school children to the President of the United States."

text, replacing worn-out words and phrases with your brand new ones.

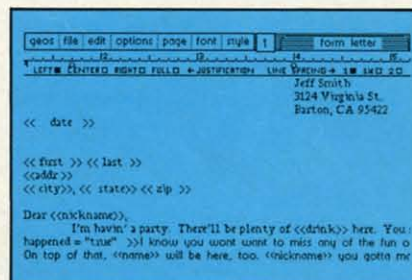
For more serious cases, hand the job over to the Workshop's Text Grabber. It takes text from several word processors—like Paper ClipTM—and lets you overhaul them with new GEOS fonts, formats and graphics.

A few more built-in features. Every project leaves the Workshop looking beautifully finished, too. Because it not only comes with LaserWriting compatibility, there's even a

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Who knows? You just might build a name for your self.

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Reader Service No. 297

VORTEX

For the C-64

By Sean Wagle

The Vortex is a projection of another universe into our own, surrounded by protective tiles. Alien creatures spiral out of it from a reverse vortex in their own universe. The task of the game player is to avoid the aliens, get through the tile barriers, and close this "gap" in space.

Enter *Vortex* (page 134) using *Ahoy!*'s *Flankspeed* machine language entry program (page 111). To run *Vortex*, type SYS 49152. After a short pause (drawing sprites, setting up data tables), the title screen will appear. Select a skill level and begin by pressing fl or f3.

Your ship will appear at the bottom left corner, traveling left. Joystick left rotates the ship counterclockwise; joystick right rotates it clockwise. The fire button releases a missile in the direction the ship is facing. Holding the fire button stops the ship's motion. When the button is released, the ship resumes moving. (Notice that the ship can still rotate while stopped.) The ship can scroll around the screen from any side and reappear on the opposite side.

The Vortex is the flashing dot in the center of the screen. The object of the game is to shoot through the tiles that protect it and hit the Vortex itself. On the novice skill level, each shot can remove a tile. On the expert level, the strength of the tiles and Vortex is increased and it takes many more hits to complete the mission.

The aliens can be shot, but that will only send an alien back into the Vortex. Because the Vortex is one-way, the alien must come back out again. This means that when an alien is hit while it is attempting to leave the Vortex, it is simply held at bay while the Vortex is protected. For this reason, the Vortex must be hit when no aliens are emerging from it.

You lose one of your three ships if it hits an alien, or if it runs into the tiles. Lose all three and the game ends.

There are 18 levels in *Vortex*. When the Vortex is destroyed, the player is given a new Vortex of a different color with faster aliens, as well as different sound effects for a hit on a tile. When the 18th Vortex is destroyed, the game cycles back to level one. At first this may seem difficult, but I have done it even on expert level.

The best strategy is to protect your ship, and fire at the Vortex only when opportune. Be ready to move when the aliens get too close. It is easy to let one's attention become too concentrated on the Vortex, when the real danger is from the aliens circling in from behind. Also, be aware that the aliens, like yourself, can scroll around the screen, so trying to "hide" offscreen or on a border is not necessarily safer than fighting in the open.

Scoring is as follows:

	Novice	Expert
Alien	1 point	1 point
Tile	10 points	10 points
Vortex	10 points	10 points
Completed level	100 x level	200 x level

These keys have the following functions:

fl=Begin game (Novice)

f3=Begin game (Expert)

LOCK=Pause game

When fl or f3 is pressed with CTRL or SHIFT, the rotation of the ship alternates between fast or slow for the next game. ☐ SEE PROGRAM LISTING ON PAGE 134

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Reader Service No. 153

ARE YOU SEARCHING FOR FRIENDS?



If you're finding it increasingly difficult to find anything at all, maybe it's time you found out about geoDex. The GEOS-compatible directory that generates mailing lists. Prints address labels. And sorts out all sorts of things for your Commodore.

Try directory assistance.

With a little help from geoDex, you can call up a directory organized from any three categories you choose. Which means you can list your friends by name, telephone number or almost anything else that can be assigned its own three-character code.

Like "MEN" for guys you know. Or "GRL" for girls you know. Or "FOX" for girls or guys you'd like to know.

But no matter how you choose to categorize them, if you can

point and click a mouse, you can call up any list of friends with geoDex's easy-to-read graphics.

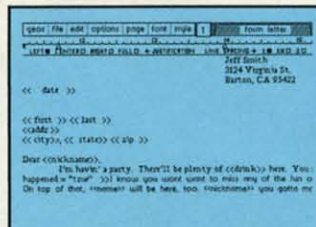
Our most inviting feature.

Of course, once you've gotten your friends organized, the next thing we recommend you do with geoDex is really very simple.

Throw a party.

You see, geoDex comes with geoMerge, a mail merge program that customizes form letters, announcements—even party invitations—with the names and addresses stored in geoDex.

First you write the letter with geoWrite. Then you select a list from geoDex.



Put them both together with geoMerge and it's toga time!

The search is over. So if you're tired of looking for friends, waltz right down to your

software dealer and ask him for geoDex. We can't guarantee it'll win you more friends, but it'll certainly keep you from losing them.



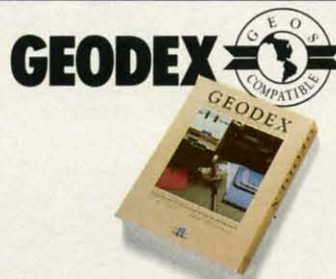
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geoDex \$39.95

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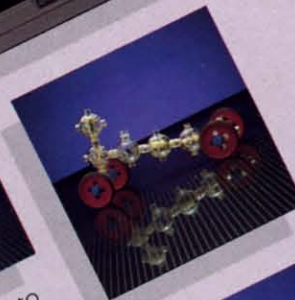
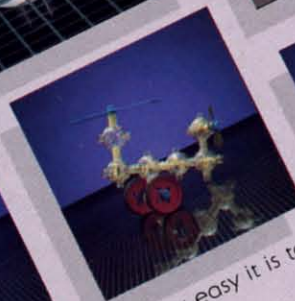
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For Ages 10 years old and up.
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For use with
your home
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- Includes CAPSELA® motorized parts

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- Technical information
- Add on modules and parts (purchased separately)

For more information call 1-800-824-2549

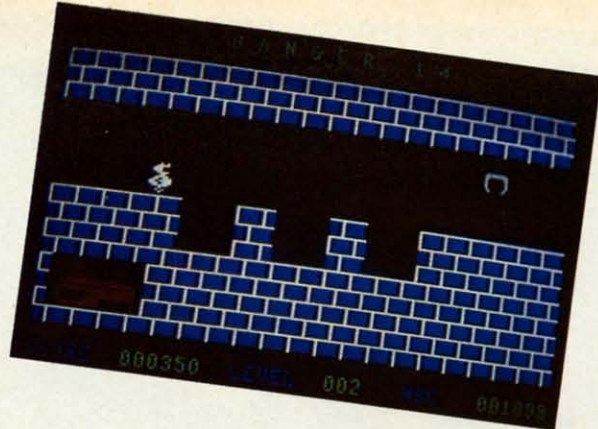
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HANGER 14

For the C-64

By Justin Luton



The Greater Andromeda Tea Biscuit Company finally traced its hijacked cargo rocket to a nearly deserted spaceport on the planet Metalion. The planet's name is derived from the many different colored metals of which it is formed. It is because of the planet's metallic composition that you, a robot, have been sent to retrieve the rocket from its hiding place in Hanger 14—for reasons I'll describe below.

The game is played with a joystick plugged into Port 2. The joystick movements are self-explanatory: move right or left to go in either direction, and push the fire button to jump. To make the robot jump in a certain direction, point the joystick in that direction and press the button.

There are seven consecutive levels of play, each level

harder than the previous one. At the end of each level is a device that will magnetize your robot. This is necessary because of the many craters in the metal floor. While your robot does not have the ability to jump the entire width of the crater, when he is magnetized he can go a little bit over the edge without falling. But be careful not to go too far over the edge, because the magnetic hold will weaken and your robot will fall to his doom.

In addition to the pits, the hijackers have left various other obstacles in your way, but I will let you discover them for yourself.

The game is written completely in BASIC. It contains a few multicolor and redefined characters, as well as five sprites. ☐ **SEE PROGRAM LISTING ON PAGE 119**

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STARFIGHTER

For the C-64

By Mike Carston

Starfighter is a simple yet enjoyable game to play. It has multicolor sprites, hi-res graphics, sound effects, and machine language subroutines for faster play. It also has a high score feature and joystick control.

PLAYING THE GAME

Type in a copy of *Starfighter* and save it. Type RUN (be sure you have your joystick plugged into Port 2) and a title screen will appear. After about a 30 second delay, the game will start. You are the gray ship (of which you get three) at the bottom of the screen. Your targets are the red enemy ships trying to dodge you.

To control your ship, move the joystick in the direction you want to go. Press the red fire button to fire a bullet (hold down the fire button to shoot a continuous stream of bullets). If you are hit by an enemy ship, you lose one

of your own ships and go back to the starting position. If you lose all three of your ships, you will return to the title screen where your score is displayed along with the top five scores. If you wish to start a new game, press the joystick fire button.

SCORING

Every time a bullet hits a red ship, it explodes, and you receive 100 points. If you get hit by a red ship, you both explode and you still receive 100 points. After the game has ended, you get so many bonus points. These are calculated by taking your score and dividing it by 10. If your score is good enough, it will be displayed on the top five score board, ranked appropriately.

I hope you enjoy *Starfighter*. If you like going for top scores, mine's 70,400. □

SEE PROGRAM LISTING ON PAGE 116



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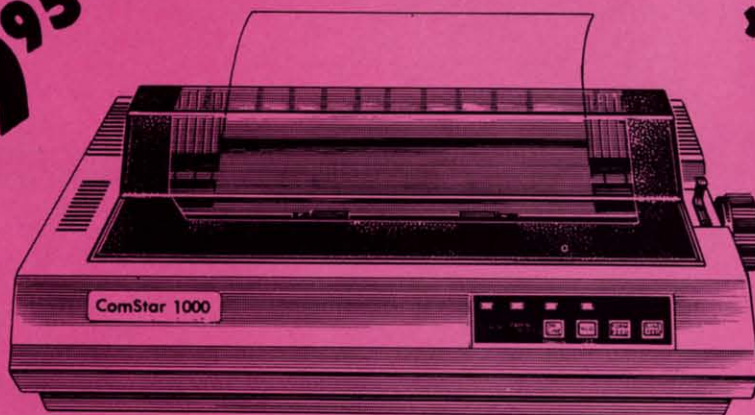
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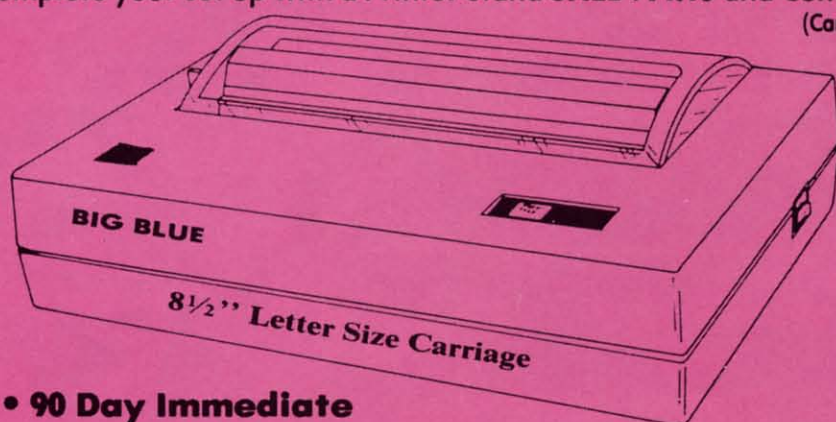
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Basic Magic

By Dale Rupert

It seems like magic. Program lines vanish before your very eyes, then mysteriously reappear. Entire programs are erased and yet somehow miraculously rematerialize. No, it is not done with mirrors. This computer magic is all performed with pointers and some help from the machine language monitor program.

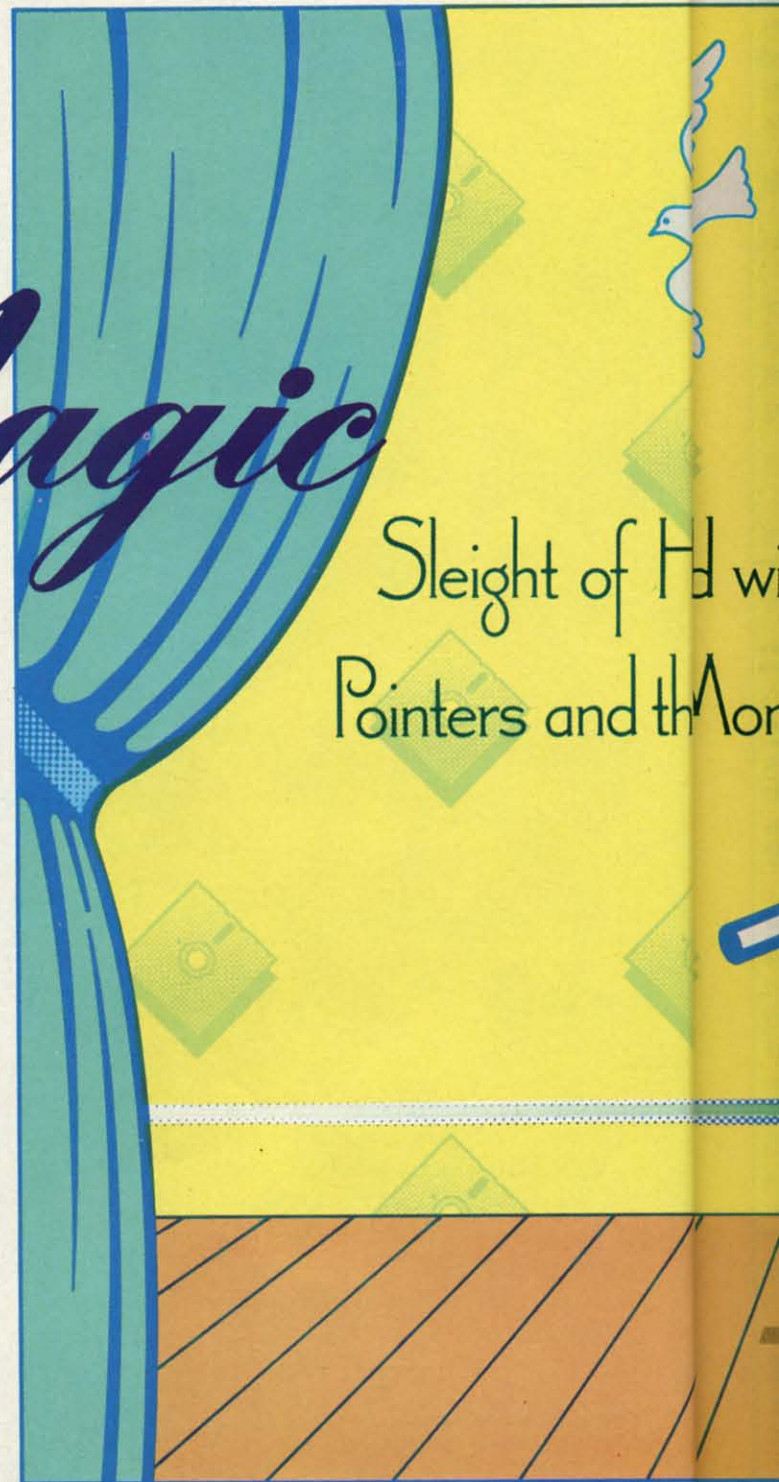
The Commodore 128 has a built-in program called the monitor which allows easy access to the inner workings of the computer. With the monitor, we can easily search for, look at, and change values in memory. After we load a BASIC program into memory, we can call up the monitor and begin to perform some tricks.

If you are using a different computer, the ideas we will discuss are still applicable, but you must use an externally loaded monitor. Also the addresses and values will be different from those used by the C-128. Refer to *Rupert Report* #12, *Diving Into BASIC*, in the December 1984 issue of *Ahoy!* for details about the C-64.

There are a few concepts which must be clear before we can begin to see what is going on inside our BASIC programs. Probably the most confusing and important aspect of our discussion deals with pointers. A pointer is a number which represents a memory address. A pointer is stored in two parts in adjacent memory locations. The most difficult aspect of dealing with pointers is distinguishing between the *address* of the pointer and the *value* of the pointer.

The address of a pointer tells where the value of a pointer is stored in memory. For example, page 503 of the *C-128 Programmer's Reference Guide* lists a pointer called

Sleight of Hd w
Pointers and th Mor



TXTTAB which is stored at address \$002D (45). (All hexadecimal values will be preceded by a dollar sign. All other numbers are assumed to be decimal values.) If we look at memory location \$002D (45), we will see a one-byte quantity which is the least significant byte (LSB) of the value of the pointer TXTTAB. At the next higher memory location \$002E (46) is the most significant byte (MSB) of the value of TXTTAB.

f Hd with
d the Monitor



JACK TOM

The actual value of TXTTAB is the combination of its LSB and its MSB in the following manner:

$$\text{TXTTAB} = \text{LSB} + 256 * \text{MSB}$$

If you just turn on your C-128 and enter this:

```
PRINT PEEK(45), PEEK(46)
```

the computer displays 1 and 28. The LSB is 1 and the MSB is 28. Consequently the value of the pointer TXTTAB is 7169 ($1 + 256 * 28$). According to the PRG, this means that the text of our BASIC program will begin at location 7169. If we load a program and then look into memory starting at address 7169, that is where we will find our program.

Let's reiterate. The pointer to the start of BASIC text

AHOY! 33

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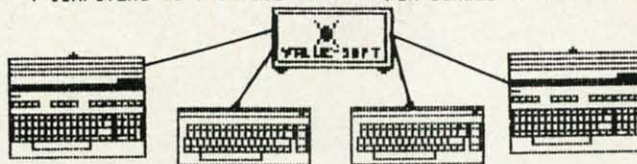
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is called TXTTAB, and it is always located in the two bytes of memory at addresses 45 and 46. The value of the pointer TXTTAB is determined by reading those two bytes of data, LSB and MSB, and combining them as shown above. The value of the pointer may vary, but its address will not.

Just to show how the value of TXTTAB changes, enter this statement:

GRAPHIC 1

This statement causes a block of memory to be set aside for bit-map graphics. As a result, the storage area for BASIC programs is shifted higher in memory. Now if you enter

```
PRINT PEEK(45) + 256 * PEEK(46)
```

the result is 16385 (\$4001). The value of the pointer TXTTAB is 16385, and that is where the text of our BASIC program begins in memory.

Bring things back to normal with this statement

GRAPHIC CLR

and then find the value of the pointer. It should equal the original 7169. The 9 Kbytes is no longer allocated to the graphics color memory and bit map. Now 9216 additional bytes are available for a BASIC program.

Interpreting pointer values is somewhat easier in hexadecimal than in decimal. Enter the monitor program by typing MONITOR (or press SHIFT-F8 if you have not redefined your function keys). To see the value of the pointer TXTTAB, simply enter M2D,2E. The monitor speaks fluent hexadecimal. The M command tells the monitor to display memory locations from \$2D to \$2E. The monitor actually displays the next multiple of 16 addresses (8 if you are using the 40-column display). You should see one row of memory values starting at location \$2D like this:

```
>0002D 01 1C ....
```

This means that the value at address \$2D (\$0002D) is \$01, and the value at address \$2E is \$1C.

The value of TXTTAB in hexadecimal is found by combining the LSB (\$01) and MSB (\$1C) in reverse order, hence \$1C01. Amazingly enough this is equal to 7169, which we calculated earlier in BASIC.

You may use decimal values in the monitor by preceding them with "+". For example, M+45,+46 displays the same results as M2D,2E. Also, you may press the space bar instead of the comma to separate starting and ending addresses. If you don't specify an ending address, the monitor displays 12 lines of output.

To exit the monitor, enter X. That returns you to the READY prompt in BASIC. Run and study *Pointer Printer* on page 112 to display the values of pointers at ad-

resses 45 (TXTTAB) and 4624 (TEXT__TOP).

MONITORING A PROGRAM

Enter the following program exactly as shown below:

```
1 PRINT"LINE 1"  
2 PRINT"LINE 2"  
3 PRINT"LINE 3"
```

There should be one space after the first number and one space before the second number in each line. Be sure to put the quotation mark at the end of each line. Each line is 15 characters long.

Enter GRAPHIC CLR if you have been using a graphics display. Then enter MONITOR. Type M2D,2E to find where in memory your program starts. The first two bytes should be 01 1C as we saw before. From this we know to look at address \$1C01 to find our program. (The monitor displays five-digit addresses. The first digit represents the bank number which will be zero in our examples. Address \$1C01 in bank zero is displayed by the monitor as \$01C01.)

Type M1C00 and press RETURN. Location \$1C00 contains 00. Our program begins with \$0F at location \$1C01. In the ASCII display at the right of the screen, you should recognize the literal parts of the program within quotation marks. The line numbers and the PRINTs are not seen in the ASCII display.

Let's examine the structure of a BASIC program in memory, using the hexadecimal side of this monitor display. The first seven bytes starting at \$1C01 are

```
0F 1C 01 00 99 22 4C
```

The first two bytes form a pointer to the start of the next BASIC line. We will come back to that in a moment. The next two bytes (\$01 \$00) are the hexadecimal representation of the line number in standard LSB MSB fashion. The line number of the first line is \$0001 or 1. The \$99 is the hexadecimal value for the PRINT statement token. The \$22 and \$4C represent the first quotation mark and the "L" at the start of "LINE 1." To see this, count characters in the ASCII display at the right. (Bytes with undisplayable ASCII values are shown as dots.)

We used the pointer TXTTAB at address \$002D to locate the first line of our program, which is at \$1C01. The first two bytes at \$1C01 (LSB=\$0F and MSB=\$1C) form a pointer which shows where the second line of the program begins. This pointer at address \$1C01 written as MSB,LSB has a value of \$1C0F. If you look at the monitor display for addresses \$1C0F and \$1C10, you should see \$1D and \$1C which are the LSB and MSB of the pointer to the third line of the program. Therefore we know the third line starts at \$1C1D.

Look at the two bytes starting at \$1C1D. This is a pointer to the start of the next line of the program, but our program has only three lines. Where does this pointer lead us? The pointer at \$1C1D has a value of \$1C2B (the

two bytes starting at \$1C1D are \$2B and \$1C). If we look at \$1C2B, we see two bytes of 00. The computer knows it has reached the end of a program when it comes to a pointer with a value of \$0000.

It should be helpful to summarize the pointers:

Pointer at \$002D points to \$1C01 (start of line 1)

Pointer at \$1C01 points to \$1C0F (start of line 2)

Pointer at \$1C0F points to \$1C1D (start of line 3)

Pointer at \$1C1D points to \$1C2B (two bytes of zero)

One more pointer is important for some of the tricks we want to do. That is the pointer called TEXT__TOP at address \$1210. This pointer locates the byte just past the double zeros at the end of the program text. If you enter M1210,1211 in the monitor, you should see two bytes \$2D \$1C which represent \$1C2D. This pointer will change as we change the number or size of lines in our program.

TIME FOR TRICKS

With only a few pointers up our sleeve, we can perform magic. Our first trick is called "The Disappearing Line." With our three-line program in memory, from the monitor enter M1C00. Change the pointer at the start of line 1 so that instead of pointing to line 2, it points to line 3. That is very easy to do. Simply move the cursor up to the "0F" at address \$1C01, type 1D, and press RETURN. Once you press the RETURN key, that value is changed in memory from \$0F to 1D. (We don't need to change the MSB of the pointer at address \$1C02.) Move the cursor to the bottom of the display (or press ESC @) and enter X to return to BASIC.

In BASIC enter LIST. Presto, chango! Lo and behold, line 2 has vanished from sight. But now for something *really* mystifying. Enter RUN and what do you see? The output shows that all three lines are still executed. LIST the program again, and it looks like there are only two lines.

There are two ways to bring back the vanished line. We could return to the monitor and change the pointer at \$1C01 back to \$0F. Rather than do that, try this amazing feat. Pick some magic number from 4 to 63999. Got one? In BASIC simply type your selected number. Press RETURN and enter LIST. If you picked the correct number, line 2 should be right back in its original place.

What's the secret? Of course a good magician doesn't reveal his secrets, but that doesn't stop me. To be honest, entering *any* number from 4 to 63999 will restore the vanishing line. (Even 0 will work as well.) When you enter any potential line number, BASIC relinks all of the program lines in memory. That means that all of the line pointers are recalculated. The relinking routine sees a line number 2 which should be between line numbers 1 and 3, so it recalculates the pointer value at the start of line 1.

Evidently the RUN routine does not pay attention to the line pointers since it executed line 2 without a pointer to it. The LIST routine just stepped from pointer to pointer and consequently bypassed line 2.

Have you ever noticed a slight delay after entering a

new program line in the midst of a very long program? The reason for the delay is that the computer is recalculating all of the line pointers and moving higher-numbered lines higher in memory. The computer knows where each line ends because there is one byte of 0 after each line, as you can see in the monitor display.

THE DISAPPEARING PROGRAM

Enough of the small stuff. Anyone can make one line vanish and bring it back. How about a whole program? We have within our power the ability to revive a program which may have been given up for lost. Once again, all we need is some sleight of hand known as pointer twiddling.

Make sure our three-line program from above is in memory. LIST and RUN it just to be certain. Enter NEW. LIST and RUN now imply that the program no longer exists. There is no evidence of it in BASIC.

Let's look under the covers. Enter MONITOR and again enter M1C00. Even to the uninitiated eye, the three lines of text are clearly displayed right where they used to be in the ASCII display on the right side of the screen.

The program certainly is there in memory. So why can't it be LISTed and why doesn't it RUN? The solution is so simple, and right before your eyes. Notice the three bytes of 00 at the start of the display. The computer sees the pointer at \$1C01 as 00 00 and assumes it has reached the end of the program. All we need do is relink this first pointer, and the program text will be good as new.

We already know from above that this first pointer should be \$1C0F to point to the second line of the program. Move the cursor to the 00 at address \$1C01 and type 0F. Then press the space bar so the cursor is on the 00 at address \$1C02 and type 1C. Now press RETURN and the program has been relinked. Move the cursor to the bottom of the display and enter X to return to BASIC. Abracadabra, the program can be LISTed and run. But is everything just as it was before? Well, not exactly....

There is one more pointer which was affected by the NEW command and must be fixed up before we can add lines to our program or change it in any way. That is the TEXT__TOP pointer at \$1210 which we discussed earlier. In the monitor, enter M1210,1211. You will see that this pointer has been reset to \$1C03. We must make it point three bytes past our program once again.

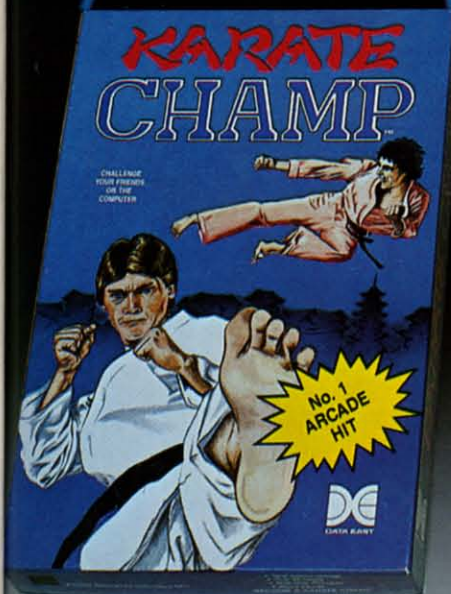
To find the end of the program, in the monitor type the Hunt command H1C05,1CFF,0,0 and press RETURN. This command requests the monitor to hunt from address \$1C05 to \$1CFF for three consecutive bytes of zero. The first address at which three consecutive bytes of zero are found is \$1C2A. Add three to this address getting \$1C2D. Now type M1210,1211 and press RETURN. Position the cursor at address \$1210 and type 2D. The next byte is already \$1C so we don't have to change it. The TEXT__TOP pointer now points three bytes past the end of our program. Press RETURN and our lost program is as good as new, or un-NEW.

NUMBER ONE ARCADE HITS...

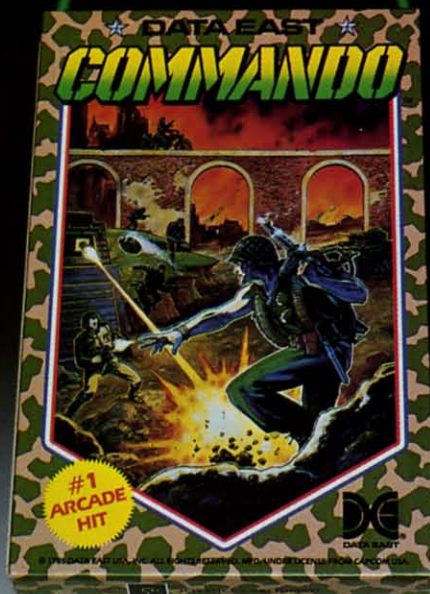


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Unlike the disappearing line trick, this restored program trick might actually be useful sometime. If we accidentally type NEW without meaning it, we know that changing two pointers with the monitor will bring the program back. We already knew what the first pointer at \$1C01 should have been for our sample program. How do we find the value of that pointer for any other program? Recall that the pointer at \$1C01 points to the start of the second program line. Also recall that the first (and every) program line ends with one byte of zero. All we need to do is find the zero byte at the end of Line 1.

Here is an easy way to find the end of Line 1. In the monitor, type the Hunt command HIC05,1CFF,0 and press RETURN. You will generally see numerous addresses displayed. We have requested the monitor to Hunt between addresses \$1C05 and \$1CFF for one byte of 0. If you look through the MIC00 display, you should see that all the addresses listed by the Hunt command do indeed contain zero.

By starting our search at \$1C05, we bypass any 0's in the first line pointer and in the line number. Therefore the address of the first zero byte corresponds to the end of the first line. That address is \$1C0E. Consequently we must set our first line pointer to a value which is one greater than this, namely \$1C0F. That is why we stored \$0F at address \$1C01 and \$1C at address \$1C02.

Of course we could have visually hunted through the MIC00 display until we found the zero at the end of the first program line, but the Hunt command is easy and foolproof. Don't forget to add one to the address found by the Hunt command. We want to point to the start of the next line, not the end of the current line.

In a nutshell, the procedure to un-NEW a program is:

1. Enter the monitor and type MIC00.
2. Hunt for the end of the first program line: HIC05,1CFF,0
3. Add one to this address and restore the next-line pointer at \$1C01 with this new value. (Remember LSB, MSB).
4. Hunt for the end-of-program address: HIC05,1CFF,0,0,0
5. Add three to this address and restore the TEXT__TOP pointer at \$1210 with this new value.

For long programs, you may have to hunt over a large interval than shown in step 4. HIC05,FFFF,0,0,0 covers the full range. If graphics memory has been allocated or if BASIC storage has been moved from \$1C01, use the TXTTAB pointer at \$002D to find the start of your program. (Change addresses in steps 1 through 4.)

TWO INTO ONE

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volve a juggling of pointers so rapid as to make the eyes of the neophyte spin. What initially appear as two independent programs will suddenly and effortlessly emerge as one.

BASIC uses the TXTTAB pointer at \$002D to know where in memory to begin loading a program. Initially this pointer has the value \$1C01 (or \$4001 if the graphic screen is allocated) as we have seen before. We will load one program into memory. Then we will move the TXTTAB pointer up to the end of that program. We will load a second program into memory starting at the end of the first program. Finally we will move TXTTAB back to the start of the first program. Thus the two programs will be merged into one.

From our previous discussion of the structure of the BASIC program and its pointers, this sequence of steps should not be difficult to follow. Since we will do this trick in BASIC, we will use decimal values. The numbers between parentheses are the decimal values of the addresses.

To merge two programs:

1. Load the first program into memory.
2. Save the value of original TXTTAB pointer (45 & 46).
3. Find the end of the first program by subtracting two from the address in TEXT__TOP pointer (4624 and 4625).
4. Put this result into TXTTAB pointer.
5. Load the second program.
6. Restore TXTTAB pointer to values saved in step 2.

To make this procedure as effortless as possible, I use a function key definition as follows:

```
KEY 4," :POKE 7,PEEK(45)
      :POKE 8,PEEK(46)
      :A=PEEK(4624)
      :B=PEEK(4625)
      :POKE 45,A-2-16*(A<2)
```

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```
:POKE 46,B+(A<2)
:DLOAD(F$)"
+CHR$(13)
+"POKE 45,PEEK(7)
:POKE 46,PEEK(8)"
+CHR$(13)
```

This is typed as one long string assigned to function key 4, although you may use any other function key. Since string storage space for all function keys is limited to 241 characters, you should not type any spaces, and you should use abbreviations for the keywords (PO shift-K, PE shift-E, and D shift-L). You should add a line number in front of KEY and save this as a one-line program called KEY4, for example. Before loading the first program to be merged, type RUN"KEY4" and NEW to re-define just this function key.

To use this function key once it is defined,

1. Load the first program.
2. In direct mode, type F\$="filename" where *filename* is the name of the next program to be merged. You must use F\$.
3. Press function key 4 (shift-f4).

That's it. Type LIST and see that the two programs are one. Before merging, you should make sure that all line numbers in the second program are higher than line numbers in the first, since the second program is merely appended to the end of the first. It is possible to RE-NUMBER the merged program even if there is an overlap in line numbers, but it is more logical to renumber the programs properly before merging.

This key definition uses page zero addresses 7 and 8 as temporary storage for the original values of TXTTAB. (The DLOAD will reset all numeric variables to 0 so we must save the values elsewhere.) A and B store the LSB and MSB of TEXT__TOP from which two is subtracted. If the LSB is greater than or equal to 2, we simply subtract 2 from it and leave the MSB alone. In that case, the expression (A<2) equals 0. The logical expression (A<2) is -1 if A is less than 2, in which case we must add 14 to the LSB rather than subtract 2. (We actually add 16 since the 2 is already subtracted.) Also if the LSB (A) is less than 2, we must subtract 1 (borrow) from the MSB.

Next the second program is loaded, and finally the TXTTAB pointer is returned to its original value. The DLOAD updates the value of TEXT__TAB automatically.

You may actually merge any number of programs. Simply repeat steps 2 and 3 for each additional program. This merge function might encourage you to develop a library of fundamental routines which are appended to your main program as needed.

The secret to all we have done here is an understanding of pointers. After you mystify your friends and amaze your acquaintances with these magical BASIC abilities, tell them there is really nothing to it. Of course it's easy when you know the secret. □

SEE PROGRAM LISTING ON PAGE 112

THE YEAR'S BEST ENTERTAINMENT

Finest Funware of
1986
for the C-64/128

By Arnie Katz
and the
editors of *Ahoy!*

"It was the best of times, it was the worst of times," Charles Dickens might have described the past year in entertainment software for the Commodore 64/128. Contradictory trends rippled through the field in the preceding 12 months, and the verdict on 1986 pretty much depends on the view of the individual computerist.

Those who demand a constant stream of new disks probably experienced some disappointment. Quantity declined precipitously for several reasons:

1. A number of small publishers who concentrated on producing software for the Commodore went out of business or diversified.

2. The Commodore 64/128 was the focus of leisure software development in 1984 and 1985. Now many companies create their games on the newer 68000-based home computers.

3. British reliance on Commodore systems which incorporate tape drives is making it progressively harder for stateside companies which rely on sales to this secondary market to produce lots of programs, because so many proposals will not work properly on tape.

Quality is another matter. The Commodore has been around long enough to become thoroughly understood by designers and programmers. While development houses grope for knowledge and insight about the Amiga, Atari ST, and even the Macintosh, the Commodore 64/128 is as comfortable as an old sweatshirt.

This high level of knowledgeabil-

ity partially compensates for the technological superiority of some of the newer brands of home computers. The designers who work on the Commodore 64/128 capitalize on more of the unit's potential than those who are still finding their way on more recently introduced systems.

Admittedly, this feeling of "comfort" has a negative side: Familiarity breeds ennui, if not outright contempt. Few of this year's new games and entertainments for the C-64/128 are startlingly original. Slick professionalism is the current order of the day. That isn't such a bad thing, all in all. The best of 1986's new disks are thoughtfully designed and programmed with consummate skill.

As a group, this year's winners are characterized by involving themes, a high degree of playability, and the kind of meaty richness which stands the test of time. The best of 1986 are great games first and foremost, not demonstrations of stunning technical virtuosity.

The writers who regularly cover entertainment for *Ahoy!* have collaborated on this survey of the best funware for the Commodore. The compilers beg the understanding of readers whose favorites were omitted and publishers whose worthy titles arrived just a little too late for inclusion. Modesty also forbids inclusion of *Borrowed Time* (Activision), the hardboiled detective adventure which Subway Software (Arnie Katz, Bill Kunkel, and Joyce Worley) coauthored with Interplay Productions.



Elite: possibly best game of the year.
READER SERVICE NO. 292



Battlefront: new level of complexity.
READER SERVICE NO. 293

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Strategy

Variety is the hallmark of this category, which includes everything from detailed military simulations to "family fun" computerized, board-games. Last year, like 1985, was a banner one, as brain games continued to dominate.

Elite (Firebird) is a top candidate for the laurels as Commodore game of the year. This economic and military simulation presents the full breadth of trading and skirmishing in the vastness of intergalactic space. The game's 18 types of spaceships are



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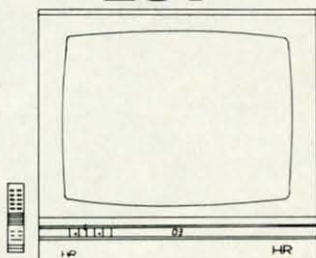
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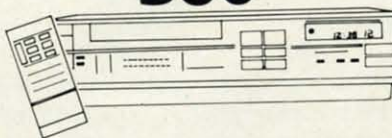
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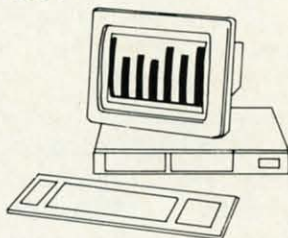
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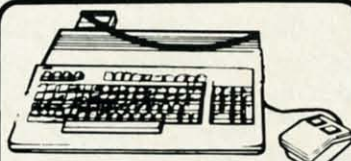
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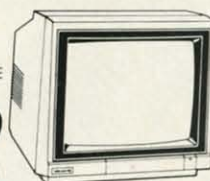
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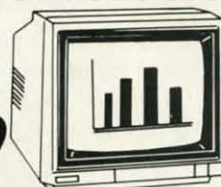
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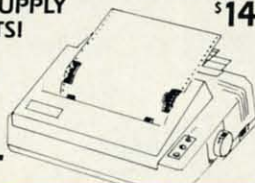
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The third entry in the Epyx sports trilogy that began with Summer Games I and II, Winter Games lives up to the series' high standards.
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rendered in attractive line graphics. *Elite* can't be mastered without much study and practice, but no other strategy title published in 1985 is more challenging or absorbing than this British design.

Eon Software has made a spectacular transition from designing non-electronic boardgames like *Cosmic Encounters* to creating superb strategy software like *Lords of Conquest* (Electronic Arts). The interplay of economic development, military might, and diplomatic machinations generates much of the appeal of this cousin of *Risk and Diplomacy*.

Another of the year's outstanding sequels is *Hacker II* (Activision). Steve Cartwright has concocted a believable follow-up to the original strategy adventure. It's hard to duplicate the off-balance feeling which *Hacker* produced in first-time users, but the remote controlled robots of the original are still fun to manipulate.

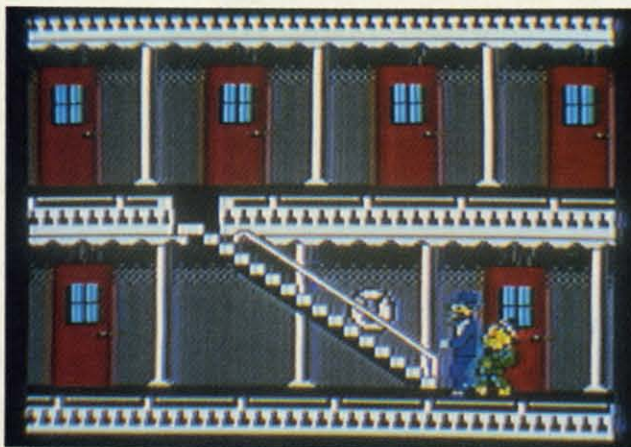
The extra wrinkle in *Financial Time Machine* (Insight) is that the speculator can peer into the future to see how his or her plans turned out. This introduces a whole new strategic dimension. *Financial Time Machine* would be an accurate replication of the stock market even without time-hopping. With it, it is a challenging mind-stretcher. (See review, page 54.)

Strategic Studies Group took war-games to a new level of complexity and sophistication with *Europe Ablaze* and *Battlefront*. The former covers the air war over Europe during World War II, while the other ex-

plores land combat during the same conflict.

Despite their wealth of detail, both are surprisingly simple to learn due to the system of onscreen menus which allows commanders to input orders quickly. They allow the computerist to assume the duties of commander-in-chief or lead a small force into battle in either stock or customized scenarios. Design tandem Roger Keating and Ian Trout has become a major creative force in computerized military simulations, and armchair soldiers can only wait expectantly for their 1987 releases.

Conflict in Vietnam (MicroProse) and *Nam* (Strategic Simulations) successfully treat a virtual wargaming taboo: the American involvement in Vietnam. By emphasizing the purely military aspects of the war, they avoid the swamp of moral judgment. *Nam* is the latest Ed Bever design to utilize the quick-play format of *Crusade in Europe*, while *Conflict in Vietnam* uses a more traditional approach.



Murder on the Mississippi merits recognition for its mating of an innovative system of on-screen menus to a fascinating concept.
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Wendell Chung has meticulously transported *Gulf Strike* (The Avalon Hill Game Co.) from the conventional gameboard to the computer screen. This "what if?" wargame is one of the few which allows the player to command land, sea, and air forces.

Gary Grigsby, a designer who invariably produces topnotch military simulations, contributed a pair of tactical gems in 1986, *Kampfgruppe* and *Battle Group* (both Strategic Simulations). Simple line-of-sight rules and indirect command control effectively simulate the "fog of war" found on actual battlefields.

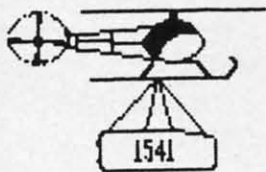
Fighter Command (Strategic Simulations) is hardly the first game about the Battle of Britain, but it makes *Ahoy!*'s "Best of the Year" list because of its unique treatment of the subject matter. The pulse-pounding dogfights and heroic air combat actions take place "off the board" in a program which minutely replicates the overall strategic situation.

The beautiful graphics for the submarine's five battle stations immediately stamp Sid Meier's *Silent Service* (MicroProse) as something utterly new in military simulations. The intensity of first-person perspective pumps life into naval combat, which many other titles present with all the excitement of pushpins stuck on a map of the ocean.

Adventures

Software fashion has played right into the hands of Commodore owners. Two years ago, the text adventure was king of the mountain. Other formats existed, but Infocom's sophis-

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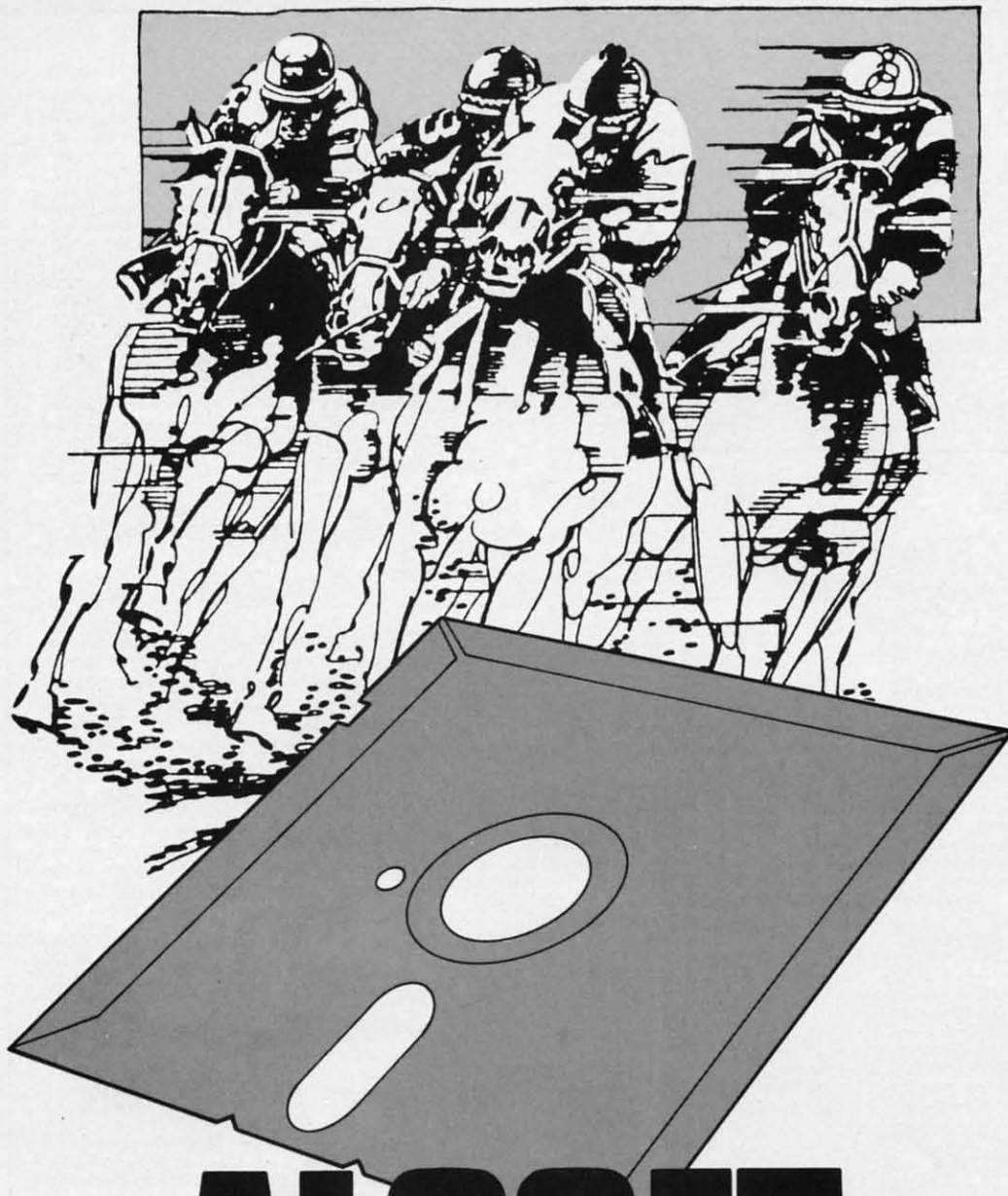
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ticated parser made prose quests number one among gamers.

Slow disk access makes text adventures cumbersome on the C-64. Infocom fully supported the system, but other labels didn't always do so. And when publishers did target an adventure at the Commodore audience, the conventional wisdom was to keep the scope of the game limited to reduce the number of times the program must pull data off the disk.

Now other adventure gaming systems have surpassed the parser-driven text type in popularity. Programs which feature flashy visuals and extensive audio are especially suitable for the Commodore 64/128 because of its graphic and sonic capabilities.

This has had a strong impact on the order in which new titles are translated for the various systems. The Commodore frequently came toward the bottom of the list for getting editions of text adventures, but it's at or near the top for illustrated and graphics adventures.

Avid rolegamers who have wished in vain for a Commodore 64/128 edition of *Wizardry* now have *Bard's Tale* (Electronic Arts). First-person perspective graphics in full-color and sound effects enhance a solid, involving gaming experience. Interplay Productions, designers of *Bard's Tale*, will have the first of many projected sequels ready for publication this month.

Ultima IV (Origin) is not only technically impressive, but quite thought-provoking. It has outstanding and varied graphics for overland and dungeon adventuring, but it is the theme of self-perfection which lifts it far above the usual fantasy treasure hunt.

Adam Bellin's *Murder on the Mississippi* (Activision) is that desirable rarity: a game which mates an innovative system of play to a genuinely fascinating concept. Onscreen menus make it easy for the sleuth to get around the paddle wheeler Delta Princess to find clues and interview suspects.

Alter Ego (Activision) is a mind game which is simple enough to play at a party and has just enough depth to provide substance for self-review.

Super Boulder Dash combines the rock-dodging original with its sequel, Boulder Dash II, previously distributed only in Europe.

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The icon-selected interactive vignettes are well-chosen and, for many, will bring back echoes of their own past.

Nine Princes in Amber (Telarium/Spinnaker) proves that fantasy adventures don't have to be scavenger hunts for magic artifacts. The plot, drawn from the first two novels in Roger Zelazny's *Amber* series, is a breath of fresh air. The game system, which permits lots of interaction between the protagonist and non-player characters, could easily serve as the basis for sequels to *Nine Princes in Amber* or even completely different adventures. It is an exceptionally fast paced adventure full of tight squeezes and ticklish situations.

You don't have to be a Trekkie to love *Star Trek: The Kobayashi Alternative* (Simon & Schuster), but anyone who enjoys the movies or the TV series shouldn't miss it. The pop-up windows facilitate realistic conversation between the player (as Captain James T. Kirk) and the rest of the

crew of the Enterprise, and keep the eye from growing bored with what's on the screen.

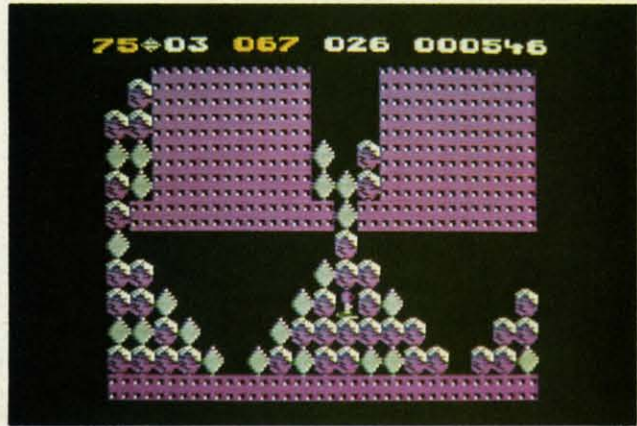
Sports

Baseball, football, and the martial arts were the most popular subjects for new sports games for the Commodore. (Other systems experienced a boom in golf simulations, but that won't affect the C-64/128 market until the translations are published this year.)

The publishers' disdain for action contests is reflected in the paucity of arcade-style sports programs. Most of 1986's best newcomers are statistical replay and action-strategy titles.

SubLOGIC, a house best known for flying simulations, entered the sports gaming field in a big way in 1986. *Football* and *Pure-Stat Baseball*, both designed by Quest, were the best statistically oriented team sports games premiered last year.

Pure-Stat is the most serious competitor to *Micro League Baseball*,



Scheduled to spawn a series of sequels, The Bard's Tale melds first person perspective graphics and sound effects into a solid adventure game experience.

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which was the top 1985 release. It includes factors like individualized stadium effects, fielding range, and full lefty-righty adjustments for pitchers and hitters, which no computer simulation had considered.

Football adds the immediacy of joystick control to a statistically based model of professional pigskin action. It doesn't have the mathematical rigor of Quest's 1985 *Super Bowl Sunday* (Avalon Hill), but the real-time control of key players adds plenty of excitement to the game.

Touchdown Football (Electronic Arts) is clearly the best action football title for the Commodore 64/128. The realistic animation and effective three-quarters perspective visuals keep the screen exciting, while the array of offensive and defensive formations and options gives plenty of scope for would-be coaches.

Championship Boxing (Sierra) and *Star Rank Boxing* (Gamestar) are knockout pugilistic programs. The former examines the art of managing great fighters of the past and present, while the latter challenges the computerist to guide a novice from his first prelim to a victory over the champ. Actually, they complement each other beautifully. Together they give a comprehensive picture of boxing from the point of view of the man in the ring and the mastermind in the corner.

A variation of the "climb through the rankings" approach puts *Kung Fu: Way of the Exploding Fist* (UXB/Spinnaker) slightly ahead of a couple of similar titles, *World Karate Championship* (Epyx) and *Karate Champ* (Data East). The ingenious joystick control schemes employed in both titles allow the gamer to try a great variety of martial arts maneuvers without having to hang over the keyboard.

The only thing more surprising than the brilliance of *GBA Championship Basketball Two on Two* (Gamestar) is that no one did it sooner. When Electronic Arts' *One on One* rocketed to instant classic status, everyone predicted that a slew of similar sports programs would follow. They never materialized. By adding a second player, *Two on Two* can

highlight passing and pattern play, the very aspects of roundball which *One-on-One* neglected.

The eight smoothly animated events of *Winter Games* (Epyx) are a symphony of computer sports excitement. Epyx will eventually run out of suitable athletic contests, but the third title in the series which began with *Summer Games* lives up to its predecessors' high standards.

Action

In the short term, there's nothing deader than a fad which has reached burnout. In retrospect, 1986 will be remembered as the year the popularity of action contests hit bottom and started to rebound.

The introduction of two titles, *Ultimate Wizard* and *Super Boulder Dash* (both Electronic Arts), provides the major sign of hope.

Though the games themselves are quite different, the marketing philosophy is similar. In both cases, EA has acquired a popular game from a small publisher and extended it with a sequel. Either title can keep a computerist playing happily for hundreds of sessions.

The Goonies (Intellidream) is one of the few recent games based on a film license. Its eight action puzzles evoke the same lighthearted feeling as the movie while also challenging the gamer's strategic skills.

Looking Forward

Is 1986 the last great year for Commodore 64/128 software? Pessimists might have answered this question affirmatively as recently as six months ago, but the current trend is positive. Commodore's introduction of the economically priced C-64C is expected to extend the sales life of the hardware and, as a result, give development of software a shot in the arm in 1987.

Whatever the future holds, there's no question about the recent past. The crop of new games released for the Commodore 64/128 in 1986 is a rich harvest of fun for computerists. And based on manufacturers' announced plans for '87, the new year looks bright as well. □

SOFTWARE SECTION

TOP GUNNER COLLECTION

MicroProse

Commodore 64

Disk; \$24.95

Top Gunner Collection is a compilation of three air-action contests from MicroProse: *Hellcat Ace*, *Mig Alley Ace*, and *Air Rescue*. Although none measures up to the current top flight simulators, getting all three on one disk is quite a bargain.

Hellcat Ace, originally published in 1983, is a streamlined cockpit-perspective dogfight program. This WWII air combat exercise assigns almost all control functions to the joystick, making it very easy to operate. The pilot's onscreen data sources include a rearview mirror, ammo and power gauges, and speed, course, and altitude indicators.

Fourteen different scenarios are offered, ranging from Pearl Harbor to the invasion of Okinawa (April 2, 1945). Each of these generally boils down to a one-on-one dogfight between the player and an enthusiastic

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opponent from Air Nippon.

Different scenarios involve various types of aircraft. In the Flying Tiger (August 13, 1940) sequence, players pilot a P-40 Tomahawk fighter, the Wake Island (December 11, 1941) scenario employs the F4F Wildcat fighter, and the battle for Leyte Gulf (October 24, 1944) puts the gamer at the controls of a revamped Devastator torpedo bomber.

The graphics are simplified and two-dimensional, but *Hellcat Ace* generates plenty of excitement with its all-out action. This game doesn't waste time raising its flaps and dropping its ailerons, either; *Hellcat Ace* is about catching a winged enemy in one's sights and blasting it to rivets.

Mig Alley Ace shares a similar orientation, but with a fascinating twist: dual cockpits split the screen, allowing two players to engage in a genuine head-to-head dogfight, or fly in squadron leader/wingman tandem against a pair of North Korean jets.

As in *Hellcat Ace*, *Mig Alley Ace* offers a variety of simulated aircraft, again determined by the scenario. Gamers pilot an F-80 Shooting Star, a modified C-119 transport, an F9F, or an F-86 Sabre Jet, with all functions (except for increase/decrease throttle and bail out) handled via joystick(s). Onscreen displays include exhaust gas temperature (EGT), power, ammo indicator, radar, altimeter, and air speed indicator.

The five scenarios are the Battle for Pusan (September 2, 1950), Suncheon Airdrop (October 20, 1950), Mig Alley (December 7, 1950), Sinuju Airfield (January 23, 1951), and Operation Strangle (June 20, 1951).

Mig Alley Ace was originally released in 1984. Again, the graphics betray the program's age, but the contest is well-delineated.

Air Rescue, on the other hand, is a derivative arcade contest which borrows elements from *Super Cobra*, *Defender*, *Choplifter*, and several other action shootouts. Players pilot an onscreen super-copter, armed with both bombs and missiles, through an underground labyrinth stocked with missile launchers and computer-controlled combat helicopters. The gamer must maneuver the craft through this dangerous subterranean civilization in order to rescue members of the archeology team who discovered it, and in the process inadvertently set off its computerized defenses.

Like the other two contests in the package, *Air Rescue* suffers from overly simple graphics. Unlike *Mig Alley Ace* and *Hellcat Ace*, however, it doesn't balance the ho-hum visuals with new or exciting play-action.

The documentation for this package is a booklet-sized collection of the original instructions from all three games. The *Hellcat Ace* section incorrectly instructs players to plug their joystick into Port 1, but the rulebook is otherwise solid if minimal. The *Mig Alley Ace* instructions include a brief section on air combat tactics. Both *Mig Alley* and *Air Rescue* employ "verification codes," a pirate-busting scheme devised by MicroProse which integrates the documentation into the loading process.

Top Gunner is a nice enough collection, though *Air Rescue* is clearly out of place. The third game should have been *F-15 Strike Eagle*, which is the best of MicroProse's air combat programs.

MicroProse, 120 Lakefront Drive, Hunt Valley, MD 21030 (phone: 301-667-1151).

—Bill Kunkel

THE NEVER ENDING STORY

Datasoft

Commodore 64

Disk; \$29.95

The Land of Fantasia is facing oblivion. Only a determined adventurer can halt The All-Consuming Nothing destroying the kingdom. More than a little grit is needed to survive this epic based on the book and film of the same name. It takes perseverance, imagination, and real gaming savvy to solve the puzzles, locate the medallion, enter the Ivory Tower, and restore the Empress to her throne.

As the heroic Atreyu, the gamer treads a kingdom of beautiful creatures and treacherous foes. The challenge begins with a sage warning—Cairon the physician says a hero is needed to stop the Nothing consuming the land. The doc doesn't squander any words of advice, though, and Atreyu hasn't a clue about what to do until Rockbiter drops by and says he's off to the Ivory Tower to chat with the Empress. He makes for the woods, leaving not so much as a trail to follow, and from then on, Atreyu is on his own.

Eventually, as Atreyu stumbles blindly through the terrain, he comes across a few helpful devices, other forest folk, and Falkor the luck dragon. If Atreyu manages to slice through the sadness that protects Morla, he wins the first concrete advice: instructions to quest for the Southern Oracle, who'll theoretically provide some answers.

Like the book that inspired it, *The Never Ending Story* is a sightseeing trip through a variety of challenges, puzzles, and marvels. The gamer encounters many people along the route, some helpful and others dangerous, and can pick up objects which come in handy down the road.

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The parser is a bit restrictive compared with those found in state of the art interactive adventures. It recognizes only a fairly limited vocabulary, so attempts to find the exact verb/noun combinations required are sometimes frustrating.

The Never Ending Story employs a sophisticated graphic treatment that makes Atreyu's quest a pleasure to watch. A panoramic view of the land stretches across the top third of the screen. Windowed on the left is the specific view of the current location. Atreyu's inventory of objects is pictured on the right side of the screen. Everything is depicted onscreen in an array of startlingly bright colors that add a fantastic element to the scenes pictured.

The text fills the lower part of the display. The text unfolds in artistic calligraphy, complete with fancy initial capitals, in a combination of blue, red, and yellow script. It's not absolutely blinding, but reading ease was obviously not uppermost in the calligrapher's mind. Still, it adds some graphic spice to the adventure.

The music which accompanies the onscreen action is drawn from the movie. When the song gets tiring, players may want to toggle it off.

The Never Ending Story is a lengthy adventure with more than 125 locations. The primitive map that accompanies the scanty documentation looks like it was drawn in the Land of Fantasia: it only provides a few hints about the geography of this peculiar kingdom. Reading the novel or viewing the movie might provide some assistance, but it isn't necessary to have experienced those antecedents in order to triumph over Nothing and save Fantasia. For the most part, the adventurer must uncover each route through trial and error, and by scrupulous attention to each conversation with the folks Atreyu meets on his journeys through the land. That and a carefully constructed point-to-point map should help to win the day.

The Never Ending Story may not be the most sophisticated adventure ever penned for the computer, but it's a rousing romp through a colorful land.

The Never Ending Story is a sightseeing journey through a variety of challenges, puzzles, and marvels in more than 125 locations.

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Intellicreations, 19808 Nordhoff Place, Chatsworth, CA 91311 (phone: 818-886-5922). —Joyce Worley

GETTYSBURG: THE TURNING POINT
Strategic Simulations
Commodore 64
Disk; \$59.95

One of the most frequent complaints about wargames is that they're too difficult for all but the most experienced gamers to handle. The flip side of the coin is that lovers of military simulations lament that the simpler games grow boring after only a few rounds of play.

Gettysburg: The Turning Point answers both those complaints effectively. It is probably the best war simulation SSI has ever produced.

Gettysburg follows the lead of *The Battle of Antietam* in two respects. It employs the same sensible game system which David Landrey and Chuck Kroegel introduced in that title, and it offers a choice of three skill levels.

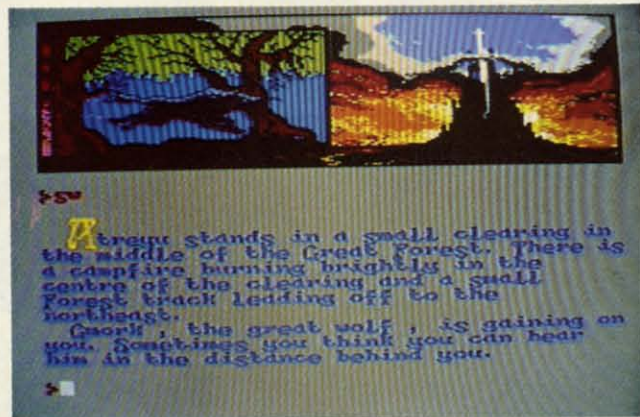
Gettysburg sealed the fate of the Confederacy in the Civil War. The

actual battle began by accident instead of grand design, but don't try to win the electronic version by luck. Whether you choose to take the underdog role of the Confederate Army or champion the cause of the Union, and no matter if facing a computer or human foe, the name of the game is planning. Rash decisions have very little chance of leading to success.

The introductory level is geared to the novice, and the rule book is written with that in mind. There are step-by-step instructions for getting started as well as simplified explanations of the operations and combat phases of the game.

The more experienced warrior will want to start at the intermediate or advanced levels. Even those who have played *Antietam* will be surprised at the advances in the system.

One new feature is the effect of the leaders upon performance on the battlefield. A unit's ability to rally and resupply ammunition is often affected by the leader's ranking. In other



Gettysburg: The Turning Point considers factors like visibility, line of sight, range, morale, and fatigue in deciding results of combats.

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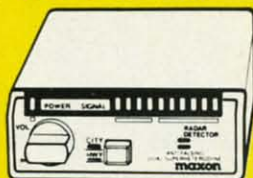


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terist, nothing will.

Another quote from the game box: "Breakers. The kind of desperate misfits who give cheap bars and dark alleys a bad name. And the worst part is, they aren't even the worst part." That's the flavor of *Breakers*; slightly irreverent, slightly tongue-in-cheek, and outrageously enjoyable.

The 83-page book which comes with this text adventure is not so much a manual as a survival kit. *Breakers* isn't one of those electronic novels which the player can boot blind and figure out as play progresses. Even highly experienced adventurers are unlikely to survive without at least skimming the manual.

There is a minimum of wasted space or text in *Breakers*. Almost everything has a purpose, even if that purpose is only to make life more difficult for the gamer.

Timing is of utmost importance in the game. For instance, while in the Breaker bar, there is an opportunity to talk to Bobo. Loan her money or tell her a lie, and you'll get nowhere. A player who speaks truthfully and offers her a quick deal ends up with a VBX that will help steer clear of the Gaks. (Remember we said Breakers weren't the worst.)

Patience is also a virtue. Even when the program gently chastises the player about waiting, a quick decision can sometimes throw you completely off the track.

Since almost nothing that happens on Slug Nebula or Borg has any earthly equivalent, a little mental preparation is not amiss. The best *Breaker* player is the one who can temporarily cut the ties to reality and plunge completely into the world of the game. It would also help to be a science fiction fan.

Among the strengths of *Breakers* is the BTZ language parser. It not only comprehends more words than almost any other parser, but it understands why it doesn't understand when player input goes beyond its vocabulary. The program generally emits explanations useful in framing more intelligible commands.

Interacting with the colorful characters in the game is almost as much

fun as solving the puzzle. When there is only one character in your area, you need only put a statement inside quotation marks to address him or her. Otherwise it is necessary to precede the actual message with the name of the character to whom it is addressed.

Another strength of *Breakers* is the intelligence of the characters themselves. They learn as your character learns. They will remember their last encounter with you and won't forget past kindness or injustice.

The world of *Breakers* isn't static. Just because a big Gak gave you a hard time at a certain location the first time you showed up doesn't mean he'll still be there.

Here are a few hints to get off to a good start.

1. Beeknavskemich might seem like a dull-witted barroom fixture, but don't ignore him. Answer a couple of his riddles correctly, and you'll get some valuable tools.

2. Answer "yes" to a lot of questions, even if you don't know the answers. In some cases, a well-disguised bluff can get you through a tight situation.

3. Don't leave the bar without the VBX, or the less than hospitable Gaks will stop your character cold.

It is also advisable to have a blank formatted disk ready to save the game. Even if provided with all the clues necessary to march right through the game, it would likely take more than one sitting. Without such a blueprint, it could require several months of regular playing to get to the bloodstone, firestone, waterstone, and the end of the game.

Breakers is low on action, but high on strategy. The computerist can look forward to many absorbing hours of play in this luridly colorful world.

Broderbund Software Inc., 17 Paul Drive, San Rafael, CA 94903 (phone: 415-479-1170). —Rick Teverbaugh

BATTLEFRONT

Strategic Studies Group

Commodore 64

Disk; \$40.00

(See illustration on page 41)

Just when it appeared that Strate-

gic Studies Group had reached the limit that could be achieved in 64K with a war simulation, along comes *Battlefront*.

In the simplest terms, *Battlefront* is a World War II corps-level land combat game. But stopping the description there would be like calling the Mona Lisa a portrait of a moon-faced lady.

The first two SSG historical combat simulations were *Carriers at War* (World War II naval) and *Europe Ablaze* (World War II aerial). Both reaped applause and awards at nearly every turn, and rightfully so. While neither is an entry-level game, either can be grasped quite easily by the experienced gamer and, eventually, even the novice. Both of them received high marks for execution and for the versatility of the scenario-creation utilities which are included on the disk.

After *Europe Ablaze*, the next title was supposed to be *The Road to Appomattox*, a grand scale Civil War

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program. Evidently, SSG decided that it was more logical to complete its World War II trilogy with a land combat simulation before moving on to another subject.

Carriers and *Europe Ablaze* were good, but it can now be said without fear of contradiction that the third time is the charm. *Battlefront* is easily the finest wargame currently available for any computer system.

It is possible, using the system utilities, to take virtually any World War II board game and convert it into a *Battlefront* scenario. But let's look at the four highly enjoyable scenarios provided with the game before tackling the construction program.

As commander of the German forces in "Crete," the objective is to rid the playfield of Commonwealth forces in seven days. There are four turns per day: a.m., noon, p.m., and night. Taking the Commonwealth side is a battle of survival; inflict maximum damage and stay alive.

Battlefront allows two armchair generals to play head-to-head, or a single participant can assume command of either side against a computer-controlled enemy.

The second outing is "Stalingrad." Armed with two Panzer divisions, the Germans must rescue the 6th Army, which is stranded in the Russian city. The Soviets must protect the northern objectives and prevent the Nazi forces from linking together.

The "Saipan" scenario is a battle of defense versus offense. The Japanese forces try to hold the southern objectives as long as possible and delay the U.S. Marines' northward progress by taking strong defensive stances. Offensive pressure is the name of the game for the U.S. This mini-game could easily serve as a training ground for any wargamer who wants to improve facets of his or her play-style.

The fourth scenario is "Bastogne." The action generally boils down to a German assault battering the U.S. defense, followed by a counterattack against the city of Bastogne.

After the players choose the field of battle, the program offers the opportunity to adjust the qualitative bal-

ance between the opponents. The way that handicap is handled is one of *Battlefront's* finest features. It changes the multiplier on victory points accumulated by either player without affecting the combat performance or the artificial intelligence of either side.



Each player can have a total of 60 battalions composed of 14 different types of units. The hexagon-gridded battlefield can be a maximum of 39 x 28 in size. The scale is about 1 km per hex.

But the real beauty of the game is its menu-driven simplicity. There are 20 different menus, and, admittedly, they aren't easy to learn. The manual presents the menus in numerical order, which isn't the best way to learn them, but it does make the explanations easy to find when a gamer wants to check a rule during play.

Using the menus, it is relatively easy to maneuver and deploy the battalions, send them into the fray, and withdraw them when necessary. As Corps Commander, the gamer issues general orders to each regiment. Unlike many wargames in which there is direct control over the movement of each battalion, the Corps Commander can only outline an objective or point out the enemy. How that order is carried out rests with the abilities of lower level commanders. It is a frustrating, yet extremely realistic way to run a war.

Air strikes or naval bombardments are incorporated in a relatively abstract manner through use of support points. The only exception to the indirect control which prevails in *Battlefront* is the movement of divisional headquarters. These HQs are important because they control how efficiently supplies and replacements are

delivered. The location of the headquarters units is the major factor in efficiency of troop movement. They are the only pieces that can be sent to a particular hex on the grid.

Active regiments are in a "Ready," "Contact," or "Engaged" state. Engaged means that the troops are actually fighting the enemy. Contact means that the unit is in close proximity to an enemy. Otherwise, a unit is Ready. In the "Ready" mode, it can be put on reserve, which gives it a chance to be resupplied and recover from fatigue.

There are four types of actions possible for a unit which is in the "Contact" or "Engaged" mode, including launching an attack.

Another unique feature is the casualty level report. The percentage of ineffective troops includes not only the killed and wounded, but those soldiers who are no longer willing or able to continue the fight. Many aren't exactly hurt, but might be out of contact, cut off, confused, pinned down, or maybe just leaderless.

Most games of *Battlefront* last about 40 turns. That's about 90 minutes against the computer or two hours with a human foe.

The same utility which allows the user to create new battles also provides a way to extend a game beyond the maximum 16 game-days. It is possible to save a game on disk, and then use that information to create a new scenario that starts right where the old battle ended.

It isn't easy to concoct scenarios without a thorough knowledge of *Battlefront*. To that end, SSG is putting out a quarterly magazine called *Run*. Ready-made scenarios for all three military simulations can be entered directly into the design utility and are available on disk. Three issues have appeared so far.

Even without this excellent support, *Battlefront* would be a landmark computer military simulation. No wargamer can afford to miss a trip to this *Battlefront*.

Strategic Studies Group, 1747 Orleans Court, Walnut Creek, CA 94598 (phone: 415-932-3019).

—Rick Teverbaugh

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BASIC AHoy!

For the C-64

By Carlos de la Guardia

BCOL

Assigns colors to background color registers 1, 2, and 3. Format is BCOL c1,c2,c3.

BIN

Returns the decimal value of an eight-bit binary number. The argument must be enclosed in quotes. Example: A=BIN ("11110000").

BUMP

Returns the collision status of any sprite. It returns a 0 if the sprite is not colliding, a 1 if it is colliding with another sprite, a 2 if it is colliding with a character, and a 3 if it is colliding with both. Example: C=BUMP(n). Note that n must be a number from 0 to 7.

CHAR

Any character's shape can be changed using this command. Using the format CHAR sc,ln,ch will change the line (ln) (0-7) of character sc (sc represents the screen display code) to the bit pattern of ch. Example: CHAR 1,0,255 will change the uppermost line of the character "A" to a solid line.

CLS

Clears the current screen. If an argument of 1 is used it clears the current window.

COLOUR

To set the colors for the border, background, and text. Format is COLOUR bd,bk,tx.

CSET

Controls which 2K block of the eight available is used for the character set. The blocks are numbered 0-7. Format is CSET bk.

CURSR

Equivalent to PRINT AT. Format is CURSR x,y,exp where x is the column (0-39) to start printing, y is the row (0-24), and exp is any valid numeric or string expression.

DOWNLD

Copies the uppercase character set to one of the eight possible 2K blocks. Format is DOWNLD bl where bl is the block at which the character set will be copied.

ENVELOPE

Defines a musical envelope. Format is ENVELOPE n,a,d,s,r,w,p

where n is the envelope number (0-9), a is the attack rate (0-15), d is the decay rate (0-15), s is the sustain rate (0-15), r is the release rate (0-15), w is the waveform (17-triangle, 33-sawtooth, 65-pulse, 129-noise), and p is the pulse width (0-4095).

FCOL

Fills the current window with any color. Format is FCOL c.

FILL

Fills the current window with any character. Format is FILL ch where ch is the screen code of the character.

FLIP

Determines which 1K block of the four available is used for the text screen. The blocks are numbered 0-3. Format is FLIP pg where pg is the number of the screen you wish to use.

HOME

Homes the cursor. An argument of 1 will place the cursor at the start of the current window.

JOY

This function returns the position of the joystick. Example: J=JOY (p) where p is the port (1 or 2) you wish to read. Possible values are:

0: none pressed	6: down/left
1: up	8: right
2: down	9: up/right
4: left	10: down/right
5: up/left	16: fire

MODE

Selects graphics mode. Format is MODE m where m is 0 for normal text mode, 1 for multicolor text mode, 2 for extended background text mode, 3 for bit-mapped graphics mode, and 4 for multicolor bit-map mode.

OFF

Turns selected sprite (0-7) off. Example: OFF s.

PAUSE

Delays program execution from 1 to 65535 jiffies (60ths of a second). An argument of 0 causes the program to halt until a key is pressed. Format is PAUSE jf.

PLACE

Places the selected sprite (0-7) at

the specified x,y coordinates. Format is PLACE n,x,y where n is the sprite number, x is the coordinate (0-511), and y is the y coordinate (0-255). Only x coordinates 24-319 and y coordinates 50-229 are completely visible on the TV screen.

PLAY

Plays a string of music using the following notation:

On: octave (n= 0-7)	Tn: envelope (n= 0-9)
Vn: voice (n= 1-3)	A,B,C,D,E,F,G: notes
[shift note]: sharps	R: rest
W: whole note	H: half note
Q: quarter note	L: eighth note
S: sixteenth note	[shift dur]: dotted note

Example of PLAY command: PLAY "V1 T3 O4 Q CDEFGAB". This plays a scale using voice 1, instrument 3, octave 4, and quarter notes.

PLOT

Plots a point onto the high-resolution screen. Format is PLOT x,y,m where x is the x coordinate (0-319) of the point to be plotted, y is the y coordinate (0-199), and m is the plot mode (0-erase, 1-draw).

PRTY

Sets the foreground priority for the selected sprite (0-7). Format is PRTY s,p where s is the sprite number and p the assigned priority. If p is 0 the sprite will appear in front of the foreground. If p is 1 the sprite will appear behind the foreground.

QUIT

Turns BASIC Ahoy! off. Note that this command erases the program in memory.

RASTER

This is one of the most powerful commands offered by BASIC Ahoy! It sets up a raster interrupt routine that allows mixed modes to appear in three sections of the screen. This routine changes four key locations during each of the three interrupts. The affected locations are control register 1 (53265,\$D011), control register 2 (53270,\$D016), the memory con-

If you program frequently in BASIC and like to use fantastic Commodore 64 graphics and sound features, you certainly know the drawbacks: the lack

of speed and the nightmare of PEEKs and POKEs.

Of course, there are lots of machine language routines that help to access these features, but after you

control register (53272, \$D018), and background color 0 (53281, \$D021). The format for the RASTER command is RASTER l1,l2,l3,b1,b2,b3,x1,x2,x3,y1,y2,y3,m1,m2,m3 where l1 is the scan line at which the first interrupt will end, l2 is the scan line at which the second interrupt will end, l3 is the scan line at which the third interrupt will end, b1,b2, and b3 are the values that will be stored at the background color register during the first, second, and third interrupts respectively, x1,x2, and x3 are the values to store at control register 1, y1, y2, and y3 are the values to store at control register 2, and m1,m2, and m3 are the values to store at the memory control register. The following table should prove useful to get the values to use at control registers 1 and 2, and the memory control register:

REGISTER	VALUE	EFFECT
Control Register 1	27	Sets normal text mode
	59	Sets high-resolution mode
	91	Sets extended background mode
Control Register 2	8	Sets normal color mode
	24	Sets multicolor text or multicolor bit-map mode
Memory Control Register	4	Selects uppercase/graphics character set and screen 0
	6	Selects lower/upper case character set and screen 0

REPEAT

Used to toggle the repeat key function. When *BASIC Ahoy!* is started, only the space and cursor keys repeat if held down. Entering REPEAT enables this feature for all the other keys. Typing it again turns it off.

SCROLL

To scroll the current window in any direction. Format is SCROLL d,m where d is the direction (1-right, 2-left, 3-up, 4-down) of the scroll, and m is the scrolling mode. If m is 0 the window blanks; if m is 1 the window wraps around.

SPRITE

To define different sprite parameters. Format is SPRITE n,b,c,e,m,c1,c2 where n is the sprite number (0-7), b the 64-byte block of memory at which sprite data is located (0-255), c the sprite color, e determines the size of the sprite (0-normal size, 1-double width, 2-double height, 3-double size), and m is the sprite mode (0-high-res, 1-multicolor). c1 and c2 are the sprite multicolor registers and are only needed when m is 1. Do not use sprite blocks 64-127, because that's where *BASIC Ahoy!* resides.

TEMPO

To define note duration. Format is TEMPO d where d is the duration of a whole note expressed in jiffies. The values of d can range from 0 to 255.

VOL

Sets the master volume. Format is VOL v where v is a number from 0 to 15.

WINDOW

Defines a window's size. Format is WINDOW x,y,x1,y1 where x and y are the coordinates of the top of the window and x1 and y1 are the coordinates of the bottom. Note that x and x1 values range from 0 to 39 and y and y1 values range from 0 to 24.

WIPE

To clear the high-resolution screen. This screen is located behind the BASIC ROM at 40960-49151.

have typed the ones that you need, you end up with five or six programs on disk or tape and dozens of SYS addresses to remember.

That's why I wrote *BASIC Ahoy!* It is a powerful utility which adds 31 new commands to BASIC 2.0. It works by changing the BASIC indirect vector table to point to new program handling routines, which check for the new commands.

Since it is written entirely in machine language, you will need *Flank-speed*, *Ahoy's* machine language entry program (see page 111), to enter *BASIC Ahoy!* Just give 9000 and 9FF0 as starting and ending addresses respectively, and you will be ready to enter the program. Once finished, save a copy to disk or tape. Now reset your computer and type LOAD "BASIC AHOY!",8,1 for disk or LOAD "BASIC AHOY!",1,1 for tape. To start, enter SYS 36864: NEW.

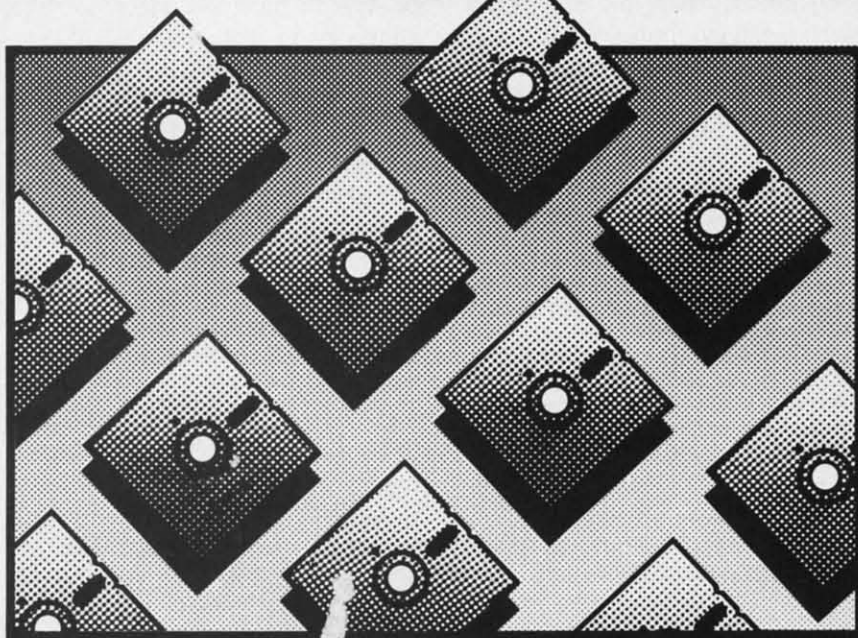
The introduction screen will appear and you will be ready to use the new commands, described in the table.

USING BASIC AHOY!

Programs written with *BASIC Ahoy!* will load and save normally. Please note that they will only function properly if *BASIC Ahoy!* is activated. Also, when using *BASIC Ahoy!*, screen memory is relocated to 32768, so use this number if you want to POKE to the screen. Keep in mind that if you use the FLIP command screen memory will also change. *Ahoy! Disk* subscribers who have trouble with any of the commands can look at the *BASIC Ahoy!* demonstration program included on January's disk (too long, unfortunately, for inclusion in the listings section of this magazine).

Using *BASIC Ahoy!* you can create your own graphics programs with much more ease than if you had to calculate all the PEEKs and POKEs. This lets you concentrate on creating exciting games or professional looking programs. It would be a great idea for you to send your best efforts to *Ahoy!* magazine so that a library of *BASIC Ahoy!* programs can be started. □

SEE PROGRAM LISTING ON PAGE 123



JACK TOM

1571 CLONE MACHINE
Micro-W. Distributing, Inc.
Commodore 128
Disk; \$49.95

It has been nearly three years since *Clone Machine* for the 1541 disk drive made its debut. At the time it represented a revolutionary new utility for the C-64 and the 1541 disk drive. Although marketed as a copy program, it was far more than that as it offered a complete collection of disk utilities which let the user conveniently examine and modify the contents of a Commodore-formatted floppy disk.

Shortly after the introduction of *Clone Machine*, Micro Ware (now Micro-W., as it seems someone else had the name first) Distributing offered an upgrade utility for *Clone Machine* known as *Unguard*. Commodore users were astonished! For the first time a utility was available which let the average user reproduce the bad sector copy protection schemes being used at the time by commercial software producers. Of course, by today's standards, *Unguard* was clumsy, time consuming, and probably responsible for more misaligned disk drives than anything else conceived by the mind of a 1541 programmer. Nevertheless, the program was an astounding commercial suc-

cess. It did the job, and for a few months had no competition in the field of commercial copy programs.

Since that time tremendous advances have been made in the field of Commodore disk copy protection and the programs which are designed to get around it. However, for those of us who experienced these events, the original *Clone Machine* still holds a special place in our hearts. In spite of all the improvements in copy protection, we find that nothing has significantly surpassed the usefulness of the basic disk utilities supplied with the original *Clone Machine*. In fact, we find its original track and sector editor still to be our favorite, mainly due to the neat and logical layout of its screen display.

Thus when Lou Ploch of Micro-W. told us last spring that his company would be offering a new version of *Clone Machine* for the 1571 disk drive, we were more than eager with anticipation. The 1571 is an amazing machine with powers and abilities never before found on a Commodore disk drive. We knew it would be able to do marvelous things to a floppy disk once the proper utility was made available.

After several weeks the first sample of *1571 Clone Machine* arrived. Unfortunately, we were unable to boot

the program, as it turned out that there was more than one version of the 1571 disk drive (at least internally) on the market. What followed was a brief interval of anxiety as Peter Patel, the brains behind this package, tracked down the idiosyncracies which were hounding his work. When the program was finally up and running we were not disappointed. *1571 Clone Machine* makes it easy to access virtually all of the 1571's unique features.

However, this was only the start. Peter told us of some of the improvements to the package which were nearly done. He also took to heart some of our casual comments and promptly incorporated them into the program. As a result we held off reviewing *1571 Clone Machine* till version 2.0 was in our hands.

As with the original *Clone Machine*, the 1571 version is far more than a simple copy program. In fact, all of the original *Clone Machine*'s basic disk utilities for the 1541 are still available as one small part of the overall package. Of course the original *Unguard* is not to be found, as that utility has been replaced by far better things.

All of the package's features are accessed by a series of menus which lead the user to the intended goal. If you happen to stray down the wrong menu path you will always have the option of returning to the beginning. However, once a final selection is reached, a reboot will be necessary. This is easy to do with the C-128's reset button and the program disk's autoboot routine. The opening menu displays four main groupings which we will now examine. The program also offers menu haters a way to go directly to their favorite utility.

The Copiers

The Copiers section offers either CBM (or GCR for Group Code Recording) or MFM (Modified Frequency Modulation). GCR is the disk

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D R A C K L I M

recording scheme used by Commodore for all its 1541-type disk drives. MFM is the recording method used by nearly all the rest of the world. In particular it is the method used by most CP/M systems, as well as the IBM PC.

If you select MFM you will be prompted through an automated procedure which analyzes the original program disk, determines its particular MFM format (number of sides, tracks per side, sectors per track, and bytes per sector), and copies the disk. Thus you may copy original CP/M and IBM PC formatted disks, in their original format, on your 1571 disk drive with a C-128 computer.

If you select CBM a second menu with four options will appear. The first two choices are between copiers for protected or unprotected disks. The second two are the file copy utility, the Side Flippers.

The Side Flippers will be of special interest to users upgrading from a 1541-based system. These utilities let you copy from one side of a double sided 1571 formatted disk to the other. This is very handy for converting "flipped" 1541 disks to double-sided 1571 disks. You will still have the equivalent of two single-sided disks when you are done. However, you will no longer have to flip the

disk, or cut a second write protect notch, to make the copy. The same utilities can be used to reconvert a 1571 double-sided disk to 1541 single-sided format. Note that the *Side Flippers* include a fast nibbler to let you back up many protected programs by "back-siding" them to other disks without creating a floppy.

Among the protected copiers you will find five additional choices. These include a Fast Nibbler, a GCR Nibbler, a Header Nibbler, a Multiple Density copier, and a Single Track Copier. All of these copiers may be customized to some degree by user-entered parameters. We

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haven't the space to go into the technical details of each of these terms, as most require an intimate knowledge of the GCR disk format. However, true disk hackers should immediately recognize their worth. If you wish to learn more about the intricate details of disk formats, a comprehensive introduction may be found in the manual which accompanies *1571 Clone Machine*. We also recommend, once again, *Inside Commodore DOS* by Immers and Neufeld for a thorough treatment of the subject.

The unprotected copiers offer a burst copier and a sector copier. The burst copier is included as a reason-

ably fast copier, which will be immune to 1571 ROM changes, as it uses the standard 1571 burst commands as documented by Commodore. The sector copier is slow, but very reliable, and will work with both the 1541 and the 1571. It requires a preformatted disk, which may be done automatically, and it can be used to copy selected tracks. The unprotected copiers are the only utilities which will work with two 1571 disk drives.

Utilities

This selection on the main menu offers you eight additional choices. The first is *Disk Doctor 128*, a full-featured, public domain track and sector editor for the 1571 disk drive (GCR format only). *Disk Doctor* is a very comprehensive sector editor with a separate 11-page section in the manual devoted to its operation. We were slightly disappointed by its inclusion, as we were hoping to see an updated version of the original *Clone Machine's* track and sector editor. In particular we would have liked to see a version which took advantage of the C-128's 80 column display to show both the hexadecimal and ASCII values of all 256 bytes in a disk sector. Nevertheless, *Disk Doctor* is worthy utility with versions

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REVIEWS

available for the VIC 20, C-64, and of course the C-128.

Disk hackers will find a sophisticated *Track Analyzer* in the utility grouping. This accepts a track number, side, and bit density as input. In return it reports on the number of sync marks it finds and proceeds to display the header bytes associated with each sync mark. Both the GCR data and the corresponding hexadecimal values are shown. Note that ten GCR bits translate to a single eight bit data byte. The *Track Analyzer* can be used to determine the type of copy protection which may have been employed on the original disk. This information can be used to guide you to the proper GCR copier to use.

The manual describes several controls available with the *Track Analyzer*. One of these is a link to the C-128's built-in machine language monitor (MLM). What the manual fails to mention is that the *Track Analyzer* stores the entire contents of the track under analysis in a buffer area starting at \$02000. By entering the MLM you can browse through the data which is still in the original GCR format as it is recorded on the disk. This means that ten bits in the buffer will translate into a single data byte, or every five bytes on the display are only four data bytes from a disk file.

A conventional error detector is also included in the utility menu. It analyzes and reports all standard DOS errors. Standard DOS errors were used extensively in early forms of copy protection. This version of the error detector runs a bit slower than other versions we have come across, but it is still handy to have around.

The next utility lets you bulk erase an entire disk. This clears the disk of all prerecorded data, including the formatting data. You might try this on disks which stubbornly refuse to accept a formatting.

Two C-128 autoboot utilities are included. These use the C-128's ability to automatically LOAD and RUN a program based on the contents of track 1, sector 0 on the disk. The first version of this utility configures the disk to autoboot a C-64 program. The

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The publisher cannot assume responsibility for errors in the above listing.

second version results in a C-128 autoboot. Either version lets you select the program which will be run by the autoboot.

As we mentioned above, the next selection on the utility menu brings up all of the original *Clone Machine's* disk utilities in C-64 mode. Those users who have upgraded from the 1541 can easily indulge in a nostalgic trip.

The last utility lets you exit the C-128 to C-64 mode with RAM bank 1 active. You may then load up a program and hit the C-128's reset button while holding down the RUN STOP key. This will bring you back to the C-128's built-in machine language monitor with the entire program intact in RAM bank 1. Only the top 256 bytes and the first kilobyte of RAM will be altered from their original state.

Disk Commands

This section contains a collection of useful items. There are separate displays of the disk directory of either side of the disk, for back-sided disks which may have been created by the disk flippers. There are also commands for scratching, renaming, and combining files, as well as validating the entire disk. Note that these last four functions are standard Commodore DOS commands which have been included for convenience.

The most interesting function in this grouping is the Format utility. This provides the expected options of formatting in 1571 double-sided format or individually formatting each side of the disk. It also lets you do an MFM format. This is the disk format used by most CP/M systems. Since there are many variations to the MFM format, you will have to provide several parameters. These include more familiar parameters such as the number of sides, the number of tracks per side, the number of sectors per track, and the number of bytes per sector. You will also have to come up with things like the interleave and a fill byte value. The manual includes the proper statistics for Osborne, Kaypro II, and IBM PC formatted disks.

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

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Expansion Module

When all else fails, simply call up the expansion module. Here will be found specific instructions and copy routines for duplicating specific programs. Our copy of *1571 Clone Machine* came with over 50 parameter files, not a very large amount by today's standards. However, we understand that this number has grown considerably since we received our last update. We expect that the total number will have increased even further by the time you read this.

Conclusion

In the form of *1571 Clone Machine*, Micro-W. has published a worthy successor to the original. Once again we have a full-featured disk drive utility, for the 1571, for the 1571 in this case, which has yet to be matched by any other commercial program. In particular, the inclusion of the *Side Flippers*, the MFM formatters, and the MFM copiers makes this a worthwhile package. On the other hand, if you are looking for a plain and simple copy program for duplicating protected software, you may be disappointed. Although the array of copy and analysis tools are more than the equal of any form of copyable copy protection, they will require more work for their complete mastery than you may wish to invest. Of course some sacrifice in automation has always been the price of operational flexibility.

Micro-W. Distributing, Inc., 1342B Route 23, Butler, NJ 07405 (phone: 201-838-9027). —*Morton Kevelson*

KRACKER JAX

Computer Mart

Commodore 64

Disk; \$19.95 per volume

Whatever your interest in Commodore computing, sooner or later you will purchase commercial software. At that time you will most likely find yourself at odds with the interests of the software's publisher. The chances are that you will not be able to create a backup of your disk-based program due to the copy protection placed there by its manufacturer.

Device 1

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Copy protection has become an accepted fact in the software industry. The relative fragility of the floppy disk as a data storage medium is an equally accepted fact. Thus it is no surprise that commercial copy programs always find themselves a ready market.

Most archival copiers use the brute force method of backing up protected disks: simply reproduce the original, complete with protection, programs, data, and all. This approach worked well for most early forms of copy protection which consisted primarily of easily reproducible disk "errors." As copy protection became more sophisticated, so did the copy programs. Most advanced copiers now include several versions for coping with different types of protection. However, protection exists that can-

program duplicates an entire 1541 disk in three passes. In the process it reports on all errors as they are encountered. However, none of the errors are reproduced on the copy. Thus the three-minute backup is a useful utility on its own if you have not already acquired one. Actually, the backup program is the same one provided with Di-Sector by Starpoint Software.

To use *Kracker Jax*, simply boot the program and follow the onscreen prompts. The first step is to make copies of all the protected disks with the three-minute backup. The second step is to reboot and select the appropriate parameter from the menu. The reboot may be avoided by simply selecting the parameters from the directory and loading in the usual way.

All of the parameter files are brief

programs written in BASIC. Thus they are all available for the analysis of their respective copy protection schemes. However,

you will require a fairly sophisticated understanding of the DOS and machine language to benefit from this information. The working commands in a parameter file are no more than a series of block reads and writes which change specific bytes of the program disk.

Kracker Jaxed programs acquire certain useful characteristics. The resulting copies are completely free of copy protection and may be subsequently duplicated by just the three-minute copier. In effect, each parameter file on the *Kracker Jax* disk is a one-shot proposition, as once used it will no longer be needed. Whenever possible the resulting copies contain only standard Commodore disk files in listable directories. This means that if and when a low-cost, usable hard disk drive should become available for the C-64, a *Kracker Jaxed* program should be readily transferred to it. In general original copy protected programs cannot be transferred to hard disk drives.

Table of Interesting Statistics Regarding the Contents of the Kracker Jax Disks

	Vol. 1	Vol. 2	Vol. 3
No. of Standard Parameters	82	104	101
No. of Special Parameters	8	0	3

not be duplicated by a Commodore disk drive. For these types only a parameter copier will do.

The parameter copier makes use of the foreknowledge obtained from a careful analysis of a program's copy protection. The parameters consist of no more or less than a detailed set of instructions which when properly applied simply neutralize or modify the program's copy protection, making it amenable to duplication by conventional methods.

Although reminiscent of candy coated popcorn, *Kracker Jax* is not edible. However, each package does contain many surprises. *Kracker Jax* relies entirely on a set of program parameters to perform its duplicative tasks. The *Kracker Jax* parameters offer the added advantage of purging the copy of all protection.

Each *Kracker Jax* package (there are three volumes as of this writing) contains a three-minute single drive backup utility and a collection of parameters. The three-minute backup

In addition to the "standard" parameter files, several "special" parameters are included with each disk. These parameters are special in that the original program disks cannot be copied by the included three-minute backup program. Instead a "nibbler" utility is required to copy the originals, after which the included parameters may be successfully applied. *Kracker Jax* recommends *Fast Hack'em* by Basement Boys Software (see review in the Oct. '85 *Ahoy!*) or *Di-Sector* by Starpoint Software.

We now come to the part you have all been waiting for. Just what program parameters are included on each of the *Kracker Jax* disks? You may release your collective breaths, because we are not going to tell you. For one thing, there is just not enough room to list all the names with this review. Besides, we have some qualms with regard to the ethics of providing such a listing. We have provided a Table of Interesting Statistics regarding the contents of the *Kracker Jax* disks. If you require greater detail, write or call the manufacturer. Note that *Kracker Jax* promises to release update volumes quarterly.

Kracker Jax is also offering *Kracker Jax Revealed/Book One* (not reviewed). This \$19.95 package will contain a book with a detailed description on how the parameters for 20 popular titles were created, machine language monitor, sector editor, error scanner, and an expansion port reset switch.

Computer Mart, Dept. A, 2700 NE Andreson Road, Vancouver, WA 98661 (phone: 206-695-1005).

—Morton Kevelson

GNOME KIT

Briwall

Commodore 64 and 128

Disk; \$39.95

Gnome Kit is a potpourri of BASIC, DOS, and machine language (ML) programming aids for the 64 and 128. Though almost every function can be found elsewhere in one form or another, *GK* provides the advantages of a single source approach: convenience and expediency. Just consider it

Device 9 THE-VAULT

Does disk swapping seem to waste hours of your time? Are you tired of waiting to load programs with a 1541 disk drive? Do you hate searching through piles of floppies just to find that one, important file?

We at Progressive Peripherals & Software, Inc., have a solution to your floppy based problems! Introducing Device 9: The Vault, a 10 megabyte, fully Commodore compatible hard disk drive for the C-64/128 by the author of Device 1, Scott Maxwell. It's a Storage Vault for all your files and best of all, it works with all the standard DOS commands, including block read and write, fast new, memory commands, etc.

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Device 9: The Vault emulates the popular 1541 disk drive, while giving you the faster hard disk access speed you want.

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Imagine being able to store over 5000 files on a single drive...placing files in subdirectories nested up to 225 levels deep.

Compatibility is no problem. Device 9: The Vault emulates the popular 1541 disk drive, while giving you the faster hard disk access speed you want, plus many additional features. You'll be able to run most of your favorite software with no problem.

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an anthology of programming utility hits.

The program's hype claims it will triple programming capabilities and cut coding time in half. Such marketing claims must be taken with a grain of salt. Almost every software publisher makes them, almost none back them up with scientifically conducted research surveys. Whose capabilities will it triple; who will it make go faster, Jim Butterfield, you, the hacker next door? These claims are relative, remember that.

If *Gnome Kit* had an astrological sign it would no doubt be Gemini, the Twins. Its multifaceted personality is intentional, a result of supporting the 64 and the 128. Besides working with the standard 64 features, it takes advantage of the 128's uniqueness. We're not talking numeric keypad and HELP key support either. *Gnome Kit* allows input of 8502 machine code, handles BASIC 7.0, and supports all 128 memory banks, to name a few.

The unprotected disk contains 64- and 128-specific program examples. Such learning aids are usually valuable get-acquainted tools for all concerned. The manual refers to and makes use of them repeatedly; it even lists the 64 version in one of the exercises. Unfortunately the review disk's 128 example suffered from a syntax error. It was no help at all.

Another aspect of the dual personality comes to light when you try to load all options simultaneously. It won't work! The DOS facility can't coexist with the BASIC/ML module. Try to force the issue and the program crashes.

Read the User's Guide????

Briwall recommends you read the entire manual from cover to cover. That is sound advice, as the functions do not necessarily operate on an intuitive level. Some are straightforward, others are not. This is particularly true in the ML module, a place where only experienced programmers should tread.

The manual was evidently written by a hacker for other hackers. This

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aids,
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Ther
Th
Why
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calls
to re
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is fine for those who've already cut their teeth, but it leaves something to be desired for the recent Commodore inductees accustomed to thoroughly proofed and professionally produced materials. It lacks a terms glossary, index, and screen shots (for ease of learning). Even worse, listings are not provided for all example programs. If they had been, failure of the 128 example would not have been so damaging.

Something else saves the manual from a fate worse than a reviewer's condemnation: the information is all there. Even if it's not the easiest to find, it's there.

A pullout quick reference card containing 99.99% (or thereabouts) of the commands helps offset the manual's faults. A short description accompanies each command. They are even grouped logically: programming aids, debugging aids, and DOS/disk commands. The card is better organized than the manual. It's also more concise.

There's No Place Like Gnome?

The 128 version does not autoboot! Why not? There's no (good) reason. Users have a right to demand the basics from every program they purchase. While this utility is not overpriced, it's not unique either. If Bri-wall is as technically competent as they want us to believe, they can insert an autoboot routine.

Both the 64 and 128 versions can be deactivated by typing "X". SYS calls reactivate them without the need to reload. 128ers can even use F8 to activate the SYS call. That's better.

Unlike BASIC 7.0, the auto (line) numbering command is in force at all times. Just start the line in the second column and GK does the rest. Delete and trace work about the same, while Gnome also offers variable dumps—simple floating point, integer, and string, as well as all array elements. If there are no variables, it returns a null set message.

The renumber and merge commands make subroutines and program modifications a dream come true. The ability to designate renum-

Superbase 128

The Best Programable Database for the Commodore 128

Superbase the only fully programmable database for the Commodore 128. The first

time I saw Superbase 128 in action was while I was in England. I was so impressed by the sheer power of Superbase that I bought several copies to manage my office better. Many of my friends and business associates wanted copies for their own use. A distribution network was born!

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The easy to use, menu driven approach means you'll be up and running in minutes.

Reflections of one Superbase 128 user. 'It does everything I want it to! The programming capabilities of Superbase 128 lets me build my own system of menus. My office is completely organized the way I want it. Now everyone in my office can easily access customer files.....without knowing anything about Superbase! That's a big help to me and my customers - it saves time and money!'

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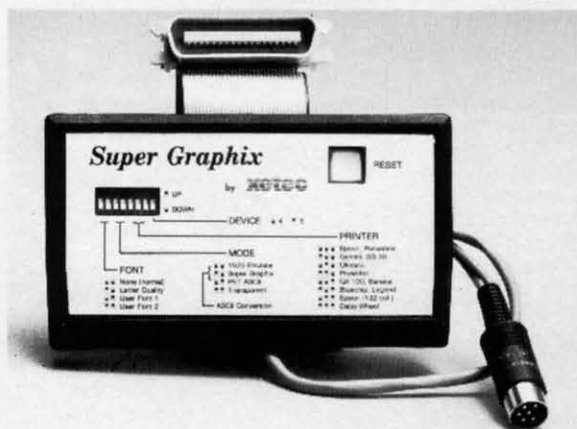
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ber ranges and generation of cross reference tables (old line/new line comparisons) also make life a whole lot easier. If the program encounters

DEJA VU A LA GNOME

Most *Gnome Kit* commands have direct counterparts or functional equivalents elsewhere. Following is a representative sampling.

KEY

1=BASIC 7.0

2=Mach 5/128

3=Fast Load

4=C-128 Monitor

Command	Alternate Source
CONCAT/APPEND	1
AUTO LINE #	1
DIRECTORY	1,2,3
SAVE	1,2,3
DELETE	1
HEX/DECIMAL/ BINARY CONVERT	2,3
LOAD	1,2,3
LOAD & RUN	2,3
OPEN DRIVE/ PRINTER CHANNEL	2,3
RENUMBER	1
SCRATCH	1
RUN	1
COPY	1
NEW	1
TRAP/TRACE	1
DS/DS\$	1
ASSEMBLE/EXECUTE	3,4
DISASSEMBLE	3,4
COMPARE	3,4
HUNT (FIND)*	3,4
TRANSFER (BLOCK TRANSPORT)	3,4

**Gnome Kit's* FIND is more powerful than 7.0's HUNT.

Similar functions are also available in DOS wedges, in BASIC 2.0, and in compiler/assembler programs. BASIC 7.0 is a superset of 2.0, so not all the aforementioned commands are available in the 64 (mode).

a problem trying to renumber code, it returns an error message and unaltered code. After fixing the bug you can renumber.

Disk drive and printer channels are

opened with a few keystrokes. Like the utility cartridges *Mach 5*, *Mach 128*, and *Fast Load*, *Gnome Kit* eliminates the need to issue "OPEN x,x,x" commands. As an aside, printed output is in uppercase only.

The Find and Directory commands work like their 64 and 128 counterparts. Save is admittedly quirky. Bri-wall recommends you save the entire program before trying the partial save, a command which can cause the system to crash. (Adios code.)

The assembler is pretty standard fare. The disassembler can translate hex, ASCII, or decimal input/output by address. Pressing RETURN after the initial action performs the same operation for each subsequent line.

The syntax checking mechanism is nice. After running a program as best as it can, *Gnome Kit* returns an error message and prints the offending line. The cursor is positioned near the actual error for identification and correction. Use the INST/DEL keys to edit the line and continue testing.

Pardon Me, But Your Slip Is Showing

One function of dubious merit (supposedly) widens the space between lines on a monitor. Activating this on an Epson hi-res RGB unit threw the display into convulsions, rendering it unreadable. Pressing RUN STOP halted the flipping; f8 re-activated *Gnome Kit*. Use cautiously, if at all.

Deleting a range of lines can cause *Gnome Kit* to lock up if there is a problem with the program being acted on. Before learning there was such a problem with *128 Example I* issued the command "D45" to delete all lines from 45 on up. *GK* went to lunch without the slightest warning. (Subsequent tests on good code showed that the delete command works fine, even if it starts at a non-existent line.)

Gnome Kit offers a variety of useful programming aids and utilities in one package. Many are available from other sources. Is the one stop approach worth \$39.95? That depends on your programming expertise, the amount of time spent cod-

Superscript 128

The Power Word Processor For The Commodore 128

SUPERSCRIPT 128
The Better Word Processor
By Steven L. Spring
President of PP&S

Superscript 128, the intelligent word processor for the C-128 from Progressive Peripherals & Software that goes beyond the competition.

I always look for the best in new software developments. When I saw Superscript 128 in action, I knew it was the best word processor available. So I asked Precision Software of England if I could sell Superscript in the U.S. and Canada. Because of my reputation for customer service and quality products, Precision agreed.

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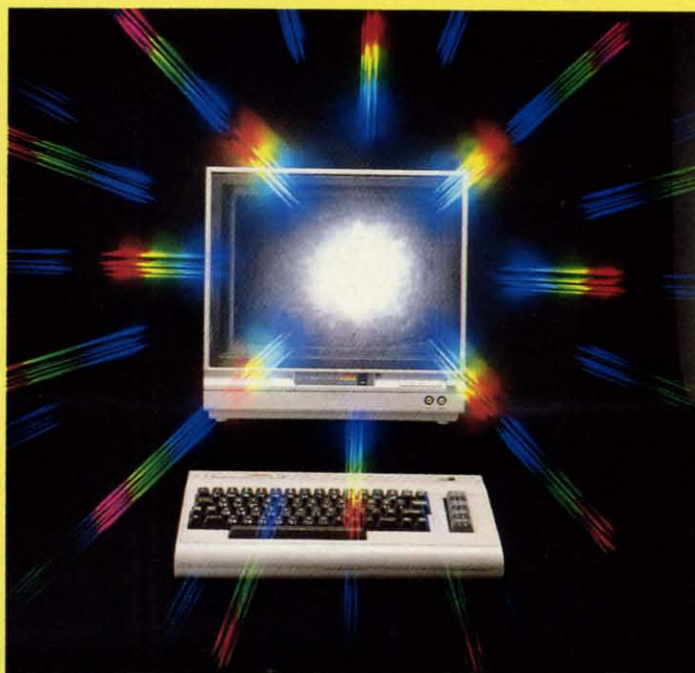
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—Ted Salamone

PROJECT PLANNER/REPORTER

B.E.S.T., Inc.

Commodore 64

Disk; \$69.95

Project management, the art of combining labor, material, machines, or services to complete a task, is no longer a pie-in-the-sky proposition thanks to B.E.S.T.'s unique *Project Planner/Reporter*. Anyone who needs to manage construction sites, maintenance chores, coordinate a staff (of designers or programmers for example), or just handle diverse school or business ventures can now do so with unprecedented efficiency and accuracy.

What Is It, Really?

Many computerphiles have had little or no exposure to project management software or its non-electronic counterpart. Consider how easy it is to produce a lengthy term paper, thesis, or business report with a good outline. The upfront work makes details fall into place. *Planner/Reporter* works along the same lines, though it goes beyond the static nature of an outline. Its dynamism translates into up-to-date project information and control. You can adapt the project schedule and manipulate resources (labor, material, etc.) to meet changing conditions.

Getting a Feel

P/R is a menu-driven program with entry prompts, mnemonic commands, and understandable activity and error messages. It makes use of the function keys as well. For those who have had some exposure to project management, B.E.S.T.'s system uses the Precedence Diagramming Method (PDM) as devised by IBM in the mid 1960's. It is alternately referred to as activity-on-node precedence diagramming.

While there is no online help, there is a separate tutorial on the disk. This extremely thorough tutorial, com-

Continued on page 97

BobsTerm Pro 128

The Complete Professional Telecommunications Package For The Commodore 128

Letdown by software that makes big promises but fails to deliver? **BobsTerm Pro 128**, a new telecommunications software package written by Bob Lentini, won't let you down. At last, a convenient and easy to use telecommunications program that goes beyond the competition.

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You can upload and download data in practically all protocol you'll ever encounter, including Punter and XMODEM. It even offers adjustments and escape routes to handle some of the RS-232 limitations of the Commodore 128. That's smart!

You'll love the convenience of directly reading and writing to double sided CP/M disks!

Never before has one package done so much, so easily. In only five minutes you'll be running this easy to learn program, without the users manual. The fully menu driven window overlay screens make operation of **BobsTerm Pro 128** a snap.

Especially powerful are **BobsTerm Pro's 128** abilities with CP/M disks. You'll love the convenience of directly reading and writing to double sided CP/M disks. You can even upload or download directly to CP/M disks using XMODEM protocol. This lets you tap into all the CP/M bulletin boards systems.

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