

SoftSide™

The Magazine For You & Your Computer

#42

THREE DOLLARS

Software Printed In This Magazine—
Microtext 2.0
A Word Processor For YOUR Computer

Word Processing

The Electronic Pen
And Paper

Text Sampler

Take The Fog Out
Of Your Writing

Network Conversations

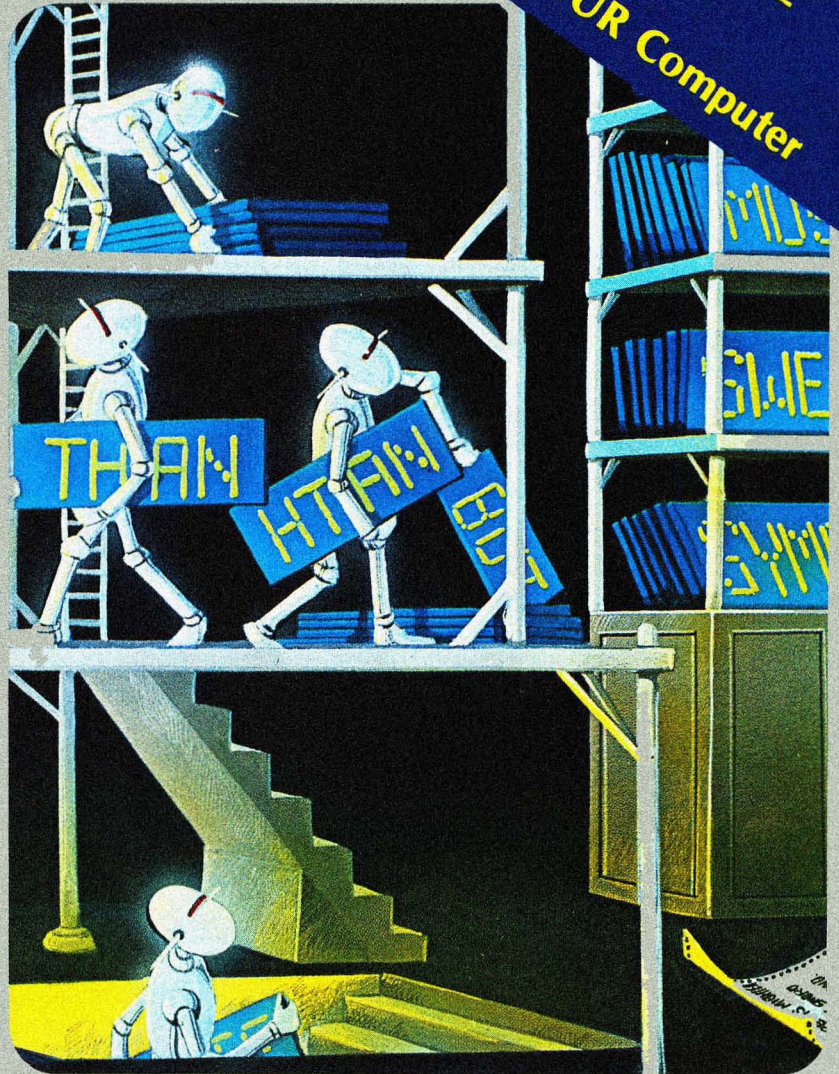
Mail For The Future

Gourmet Cooking Computer Style

Financial Operating System

The Have Your Cake And Eat It Too Investment

Software Reviews: IBM® PC—Volkswriter, The Word Plus
TRS-80® —Copyart II, Modem II
APPLE® —The Apple IIe, Applewriter IIe,
Bank Street Writer
ATARI® —AT-100 Printer, Atari Writer,
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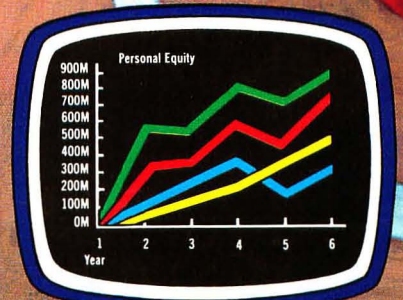
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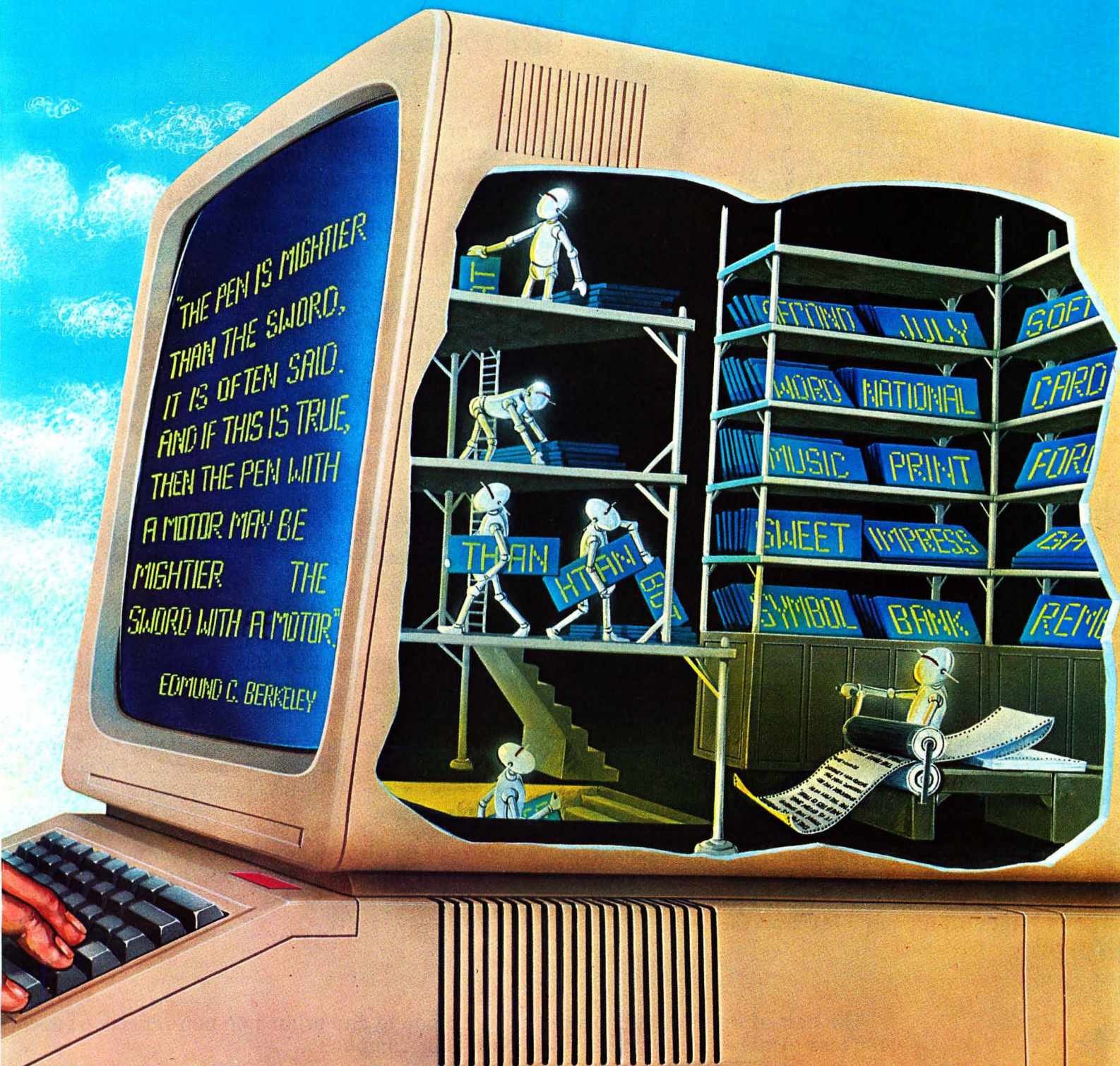
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Escape From
The Dungeon of the Gods

SIMULATIONS:

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Leyte
Titan

WORD GAME:

Word Search Puzzle Generator

MUSIC:

Flight of the Bumblebee
Melody Dice

GRAPHICS UTILITY:

Magical Shape Machine

PRACTICAL APPLICATIONS:

Database
Microtext 1.2
S.W.A.T.

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ARCADE GAMES:

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Quest
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Maze Search
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Titan

WORD GAME:

Word Search Puzzle Generator

MUSIC:

Fugue
Flight of the Bumblebee
Melody Dice

GRAPHICS UTILITY:

Character Generator

PRACTICAL APPLICATIONS:

Random Access Database
Microtext 1.2 Word Processor
S.W.A.T.

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Space Rescue
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QUEST

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Flip-It
Battlefield

GAMES OF CHANCE:

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Gambler

ADVENTURE:

Operation Sabotage

SIMULATIONS:

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Leyte
Titan

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GRAPHICS UTILITY:

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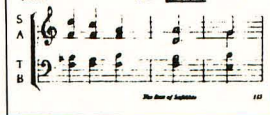
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SoftSide Vol. 6, No. 9

SUBSCRIPTION INQUIRIES should be sent to *SoftSide* Publications, Inc., 100 Pine Street, Holmes, PA 19043. EDITORIAL AND ADVERTISING CORRESPONDENCE should be sent to *SoftSide* Publications, Inc., 10 Northern Blvd., Amherst, NH 03031. Telephone (603) 673-0585.

SoftSide (ISSN 0274-8630) is published monthly by *SoftSide* Publications, Inc., 10 Northern Blvd., Amherst, NH 03031. Printed at Volkemuth Printers, St. Cloud, MN. Second class postage paid at Milford, NH, and additional mailing offices. Subscription rates: US, APO/FPO and Canada, \$30/12 issues. First Class US, First Class Canada, and Mexico, \$40/12 issues. Other foreign countries, \$62/12 issues. Media subscription rates: US and APO/FPO, — Magazine and Cassette, \$99/12 issues. US and APO/FPO — Magazine and Disk \$149/12 issues. Canada and Mexico, — add \$20/12 issues. Other foreign countries — add \$30/12 issues. All remittances must be in US funds. Entire contents Copyright © *SoftSide* Publications, Inc., July, 1983. All rights reserved. POSTMASTER: Please send form 3579 to *SoftSide* Publications, Inc., 100 Pine Street, Holmes, PA 19043.

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by Allen L. Wold

The kitchen of the future might include a robot chef and open on to a computer-controlled greenhouse. Imagine gourmet meals prepared by a different "guest chef" every night. Have your computer take a weekly inventory and automatically transmit your order to the supermarket, for delivery at your convenience. _____

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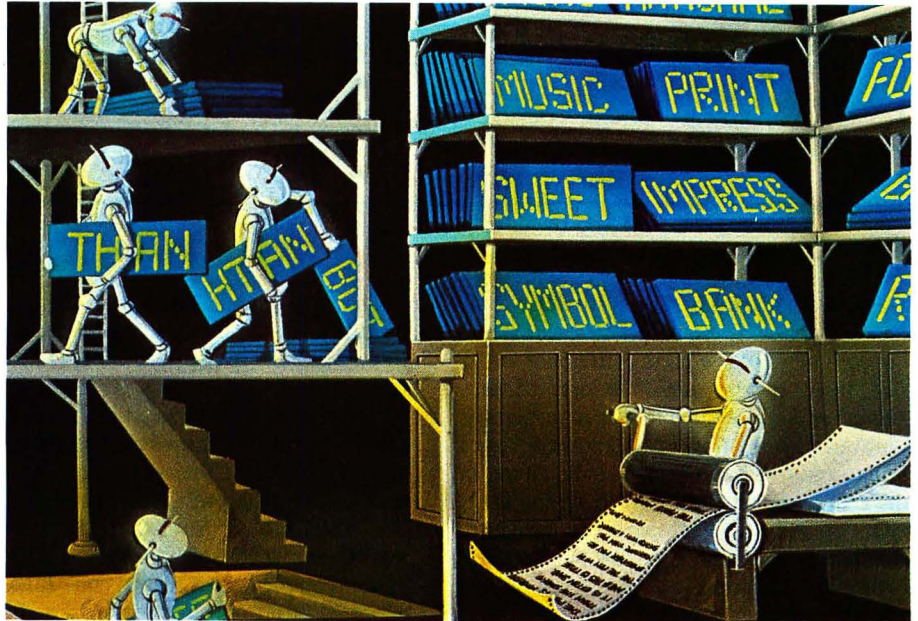
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The 1983 Summer Consumer Electronics Show *Computerz*



Hushed whispers had been stirring the air for several weeks. Now the aisles were buzzing with news of the press conference at the Art Institute the night before. Adam, Adam, Adam...seemed to ring in my ears as I moved with the flow of the crowd across a bridge and into an enormous hall. There, in the center, stood what had to be the great altar of Adam. The two-story structure shimmered with row after row of miniature racing lights. Fanfares blasted from hidden speakers and identical animated images danced side by side in row after row of television screens. Suddenly, a blaze of green light bathed the faces of the people here to study this new star. In the very center of the structure, a glass-enclosed chamber was filled with smoke and alive with intricate patterns of laser light. Floodlights formed pools of white in the green haze and the worshippers got their first glimpse of the new home computer — Adam.

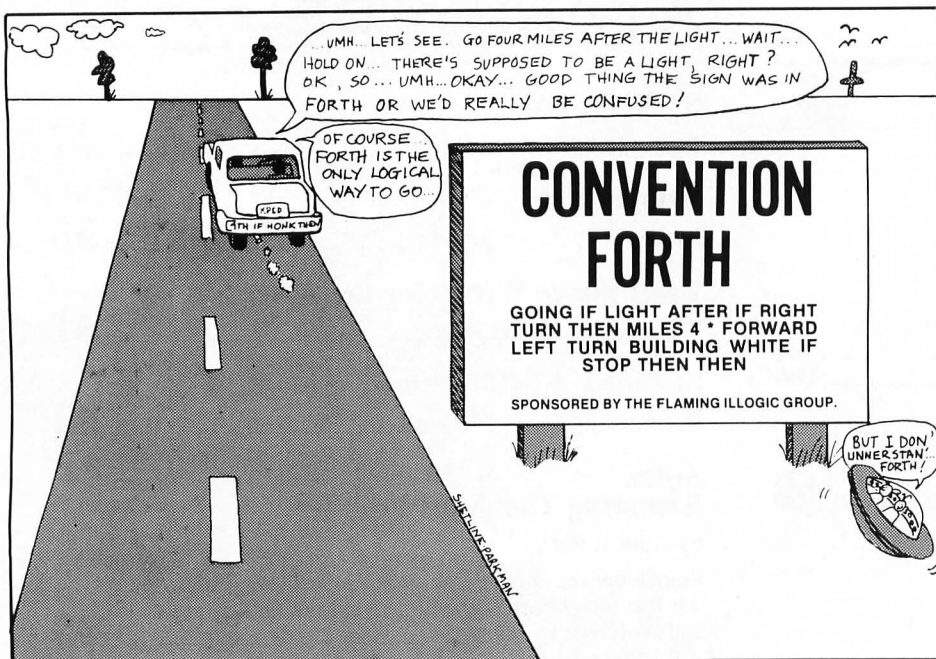
The Consumer Electronics Show has been known for its theatrical presentations of new gadgets to tempt the pocketbooks of the world. This summer's performance was no exception, as evidenced by Coleco's exhibit. It is at this show that the electronics manufacturers of the world court dealers, distributors, the press, and each other. By the way, no consumers allowed. Over 80,000 people converged on the McCormick Place complex in Chicago on June 5-8. Motor-driven trains of open-air cars shuttled crowds from one building to another. A network of carpeted walkways under cheerfully striped canopies served pedestrians. Outside, the traffic jams were frustrating, hot and seemingly endless. For the first time, the show planners attempted to segregate the computer exhibitors in their own hall. Regrettably, those that made computers as only one of their products chose to display their wares in the main hall. This lessened, but did not solve the

problem of separating the wheat from the chaff in this harvest feast of adult toys.

Jousting With Typewriters

Coleco's Adam was, indeed, the star of the microcomputer part of the show. In Adam, Coleco introduced not only a revolutionary product, but an innovative marketing plan as well. The computer includes 80K of RAM expandable to 144K. Its cartridge slot will accept all the Colecovision cartridges and with an adapter, Atari 2600 cartridges. The detached keyboard has 75 keys, 103 if you include the 14 on each of the two numeric keypad/joystick controllers. The mass storage device is a tape drive, and the DataPacks can store up to 500K bytes each. Coleco's new cassette operating system is able to load and save as fast as a disk drive. A letter quality printer which uses standard daisy wheels is included in the system. Topping it all off, a complete word processor is built into the machine. Whenever you turn it on, the machine functions as a simple electric typewriter. Push one key, labelled "WP" and it enters the word processing mode, automatically configured for standard 8½ × 11 paper with proper margins. What would you be willing to pay for all this? Coleco is willing to sell it for \$600!

This price is what makes things interesting. Recently, electric typewriter sales have fallen off drastically, because home computers with word processing software do much more for the same money. At \$600, Adam opens up an entirely new market which electric typewriters have never been able to penetrate. It's actually less expensive than most electric typewriters. It's easy enough to operate that no one will be frightened away by arcane computer jargon. Because it's a word processor, typing mistakes and messy erasures are gone forever, a great convenience to casual users and hunt and peck typists. The kids can use it for typing term papers. Mom can write to Aunt Gertrude. Dad can write



to the power company about the mistake in last month's bill. Don't forget that Adam is also a full computer and game machine. College students surely will buy thousands of \$600 typewriters which also perform complex calculations, file and sort information, print term papers without typos, and happen to play games, too. Coleco has developed a computer with just the right ingredients to appeal to almost everyone. Theoretically, they should be able to sell one to anybody who wants to buy a typewriter, which is a significantly large market.

At the same time, Atari announced their \$600 word processing system: the idea seems to be in the air, and others are sure to follow. Atari's includes a letter quality printer, the AtariWriter word processor, and the 16K 600XL, but no mass storage system (although the 1010 tape drive is an extra \$100).

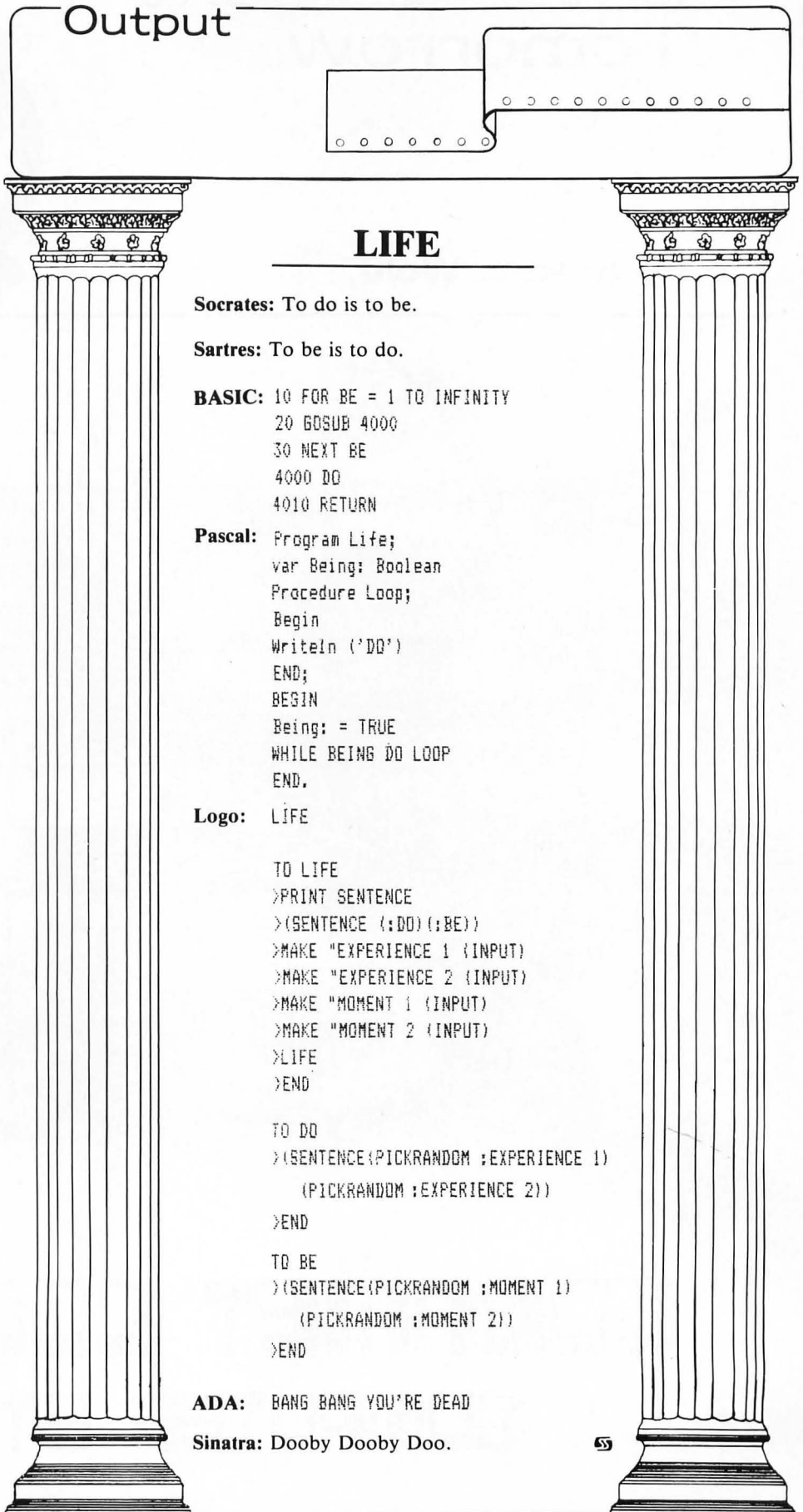
Retaining Our New Friends

What all this means to the microcomputer industry is that vast numbers of people will buy computers within the next few months. The user base has already expanded beyond hackers and hobbyists, but now it is about to reach out to include nearly every family in your town. By capturing the public's imagination with the right kind of product and promoting it properly, Coleco, and other manufacturers who join their efforts are going to spawn a new, and much larger market for micros. Naturally, these buyers will need enormous quantities of software and peripherals. And they won't be quite so patient with "unfriendly" programs, documentation, or machines. They won't want to spend time finding out how to use them. The industry will have to become much more cognizant of human factors in program design, or we will chase away all the potential new customers we are about to create.

Suddenly, the day of the truly user-friendly dream machine is upon us, and we must rise to the challenge. When your Aunt Gertrude calls, asking how to print out the letter she just wrote thanking you for the shiny new computer you gave her for Christmas, you don't want to have to tell her to POKE a simple little machine language routine into location \$F49C. She should never have to make that call. And that's where we're headed, faster than any of us believed.

Randal L. Kottwitz

Randal L. Kottwitz
Publisher/Editor-in-Chief



Output

LIFE

Socrates: To do is to be.

Sartres: To be is to do.

BASIC: 10 FOR BE = 1 TO INFINITY
20 GOSUB 4000
30 NEXT BE
4000 DO
4010 RETURN

Pascal: Program Life;
var Being: Boolean
Procedure Loop;
Begin
WriteLn ('DO')
END;
BEGIN
Being; = TRUE
WHILE BEING DO LOOP
END.

Logo: LIFE

```
TO LIFE
>PRINT SENTENCE
>(SENTENCE (:DO) (:BE))
>MAKE "EXPERIENCE 1 (INPUT)
>MAKE "EXPERIENCE 2 (INPUT)
>MAKE "MOMENT 1 (INPUT)
>MAKE "MOMENT 2 (INPUT)
>LIFE
>END
```

```
TO DO
>(SENTENCE (PICKRANDOM :EXPERIENCE 1)
(PICKRANDOM :EXPERIENCE 2))
>END
```

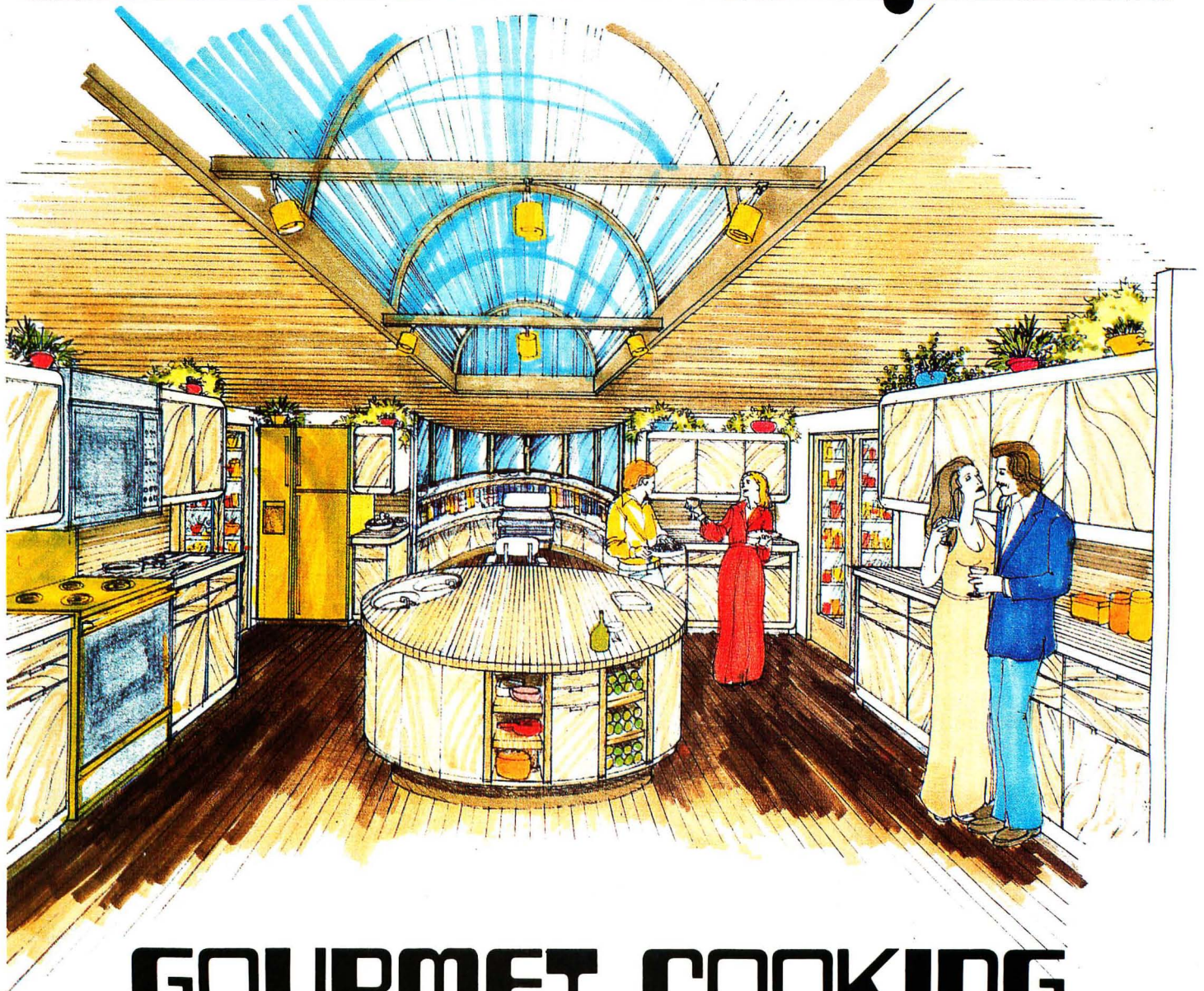
```
TO BE
>(SENTENCE (PICKRANDOM :MOMENT 1)
(PICKRANDOM :MOMENT 2))
>END
```

ADA: BANG BANG YOU'RE DEAD

Sinatra: Dooby Dooby Doo.

Entertainment Tomorrow

by Allen L. Wold



GOURMET COOKING COMPUTER STYLE

For some people, cooking is a chore. For others, especially gourmet cooks, it is an art, a pleasure, a true form of recreation. Even in this area of human activity, possibly one of the first technologies, the computer has a place. Today's kitchen is full of miraculous cooking devices, many of which have microprocessors to control their operation. Most of the ideas for computerizing the kitchen involve programs to modify recipes for varying numbers of servings, or keeping them in a database. While these systems might be useful, they are more trouble than they are worth, and hardly approach the potentials for computerizing the kitchen.

Before a computer can do anything with a recipe, it must exist in a form the computer can use. One possibility is to publish recipes in barcode form, or to use computer-recognizable typefaces, so that both optical character readers and humans could read the text. Another possibility is publication of entire cookbooks on disk or through networks such as The Source®.

The climate in a kitchen is not computer friendly because of heat, moisture, airborne grease droplets, and the possibility of spills, so your computer will have to be elsewhere. Most terminals are unable to withstand such conditions, but the flat screen displays about to be introduced are a good answer because they can be sealed from the cooking environment. If mounted on a fold-away shelf under the cabinets, they wouldn't take up precious counter space. The flat membrane keyboard, used on cash registers in fast food restaurants, is ideal since it is safe from contamination.

Although you would take care of data entry or programming at your main console, the kitchen terminal would be for manipulating recipes. It could have special keys for those functions, as well as for the whole process of food supply and cooking. Assuming all your recipes are on disk elsewhere in the house,

the kitchen terminal addresses that database directly, calling up any dish wanted. Select a particular kind or cut of meat, a special ingredient you wish to use — or can't use — and the computer presents a list of suitable recipes, with automatic adjustment for the number or size of servings. All you have to do is cook.

Fish and Microchips

But there's more. Recipes specify cooking temperatures and times, so the computer can control any electric cooking utensil, such as an oven, stove, grill, microwave cooker, frypan, or deep fryer. Just prepare the ingredients, put them in, and the computer takes over. Taking its instructions from the recipe you've called up, it monitors temperature, color, and moisture until the food is done — to your specifications — producing a perfect meal every time. Microwave ovens already do some of these things. Such cooking methods could be modified to suit particular tastes. If you want your roasts rarer, a simple modification takes care of that, and the computer remembers. If you like your bacon very crisp, the computer does it to a turn. Your soft boiled eggs will be perfect every time. Never again will anything burn, dry out, or be served underdone.

In fact, with the computer controlling the process, you can reproduce any meal exactly. Even the most subtle differences are repeatable, not only in the ingredients used, but in the whole process of cooking. Tricky egg dishes requiring constant adjustment of temperature during cooking would be no problem. You could enjoy meals prepared exactly like Mom used to make them, or a gourmet dinner programmed by the master chef at the Waldorf. Imagine having a different guest chef every night, or Julia Child on a cooking network, preparing thousands of identical meals simultaneously.

continued on page 9

*M*The MICRO-TREND COMPUTER FESTIVAL

& Exposition for the future

by Carolyn Nolan

From October 20-23, 1983, over 50,000 microcomputer enthusiasts will gather in San Francisco to participate in the *Micro-Trend Computer Festival and Exposition for the Future*. Five hundred exhibitors will demonstrate how computers can now be integrated into everyday living. The central exhibits will be the "micro cottage" and the "micro classroom."

The "micro cottage" will consist of four rooms — a work-at-home office, a communications center in the kitchen, a learning center and a game room. The home office will stress the advantages of telecomputing over commuting. Inter-office communications, database exchanges and computerized conferences will highlight this space. Anyone from a modern executive to a freelance writer will appreciate the almost limitless possibilities of such an environment.

Festival goers will also enjoy the model kitchen of the future where a micro-computer will control heating, lighting,

security and automatic watering systems. The family calendar and family histories (including immunization and financial data) will be accessed from the kitchen terminal.

In the learning center, family members will do research using disk encyclopedias they access through such telecommunications networks as The Source®, and write school assignments on word processors. They may also drill themselves in math, study French and plot geographical maps as they explore the vast and still growing library of computer assisted instruction programs. Then they will probably adjourn to the family game room for some friendly video sport that offers enhanced computer literacy as well as relaxation after a hectic day.

The festival speakers are all stars. Alvin Toffler is well known for his incisive discourses on the direction of "post industrial society." Barbara Marx Hubbard will bring her special vision of

a future filled with exciting choices. James O'Toole, has won awards for his research and writing. Christopher Cerf has been associated with the Children's Television Workshop since 1970. William Rukeyser, the managing editor of *Fortune*, is familiar to almost everyone as a financial commentator.

In order for exhibitors as well as festival visitors to share the ideas these speakers will bring, video presentations of their lectures and discussions will be shown in the exhibitors' lounge during the festival.

The Micro-Trend Computer Festival promises to be one of the most exciting microcomputer shows of the season, and would be so even if all it offered was this look at the "micro cottage" of the future. The festival plans even more, however. Visitors will also see a model "micro classroom." **SoftSide** will tell you more about that in issue 43, the annual education issue.

Correction.

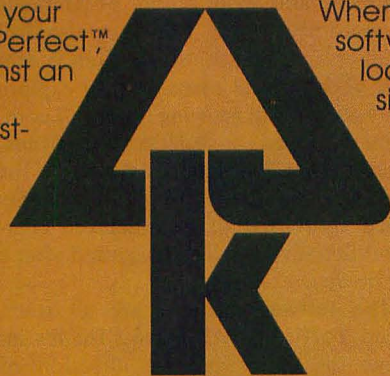


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Pantry Database

But there's still more. A friend of mine is a writer, who says a freezer is a writer's best friend. When the money comes in, he buys and stores. When times are lean, he thaws and eats. He keeps a list on the freezer door, so he knows what he has, how much, and when it was bought.

The kitchen terminal can keep track of what's in the pantry the same way. Inventory programs already exist for industry, and they could be modified to suit your particular needs. When you call up a recipe, the screen indicates if you have enough of each of the ingredients. If you actually use the recipe, the computer decrements the inventory accordingly. Thus you always know, before you start cooking, how much of any ingredient you have on hand, and know to buy more before you run out. Too many times I've started to cook something, only to discover I am out of an essential item.

The kitchen inventory can print out a shopping list for all items which have fallen below certain levels. With the advent of telecomputer shopping, you might program it to order groceries automatically once a week, and let the store deliver them to your door. During the week, you could enter extra items not on your normal inventory, as they occur to you. No cash or checks change hands — the store deducts the bill from your bank account, indicating the transaction on your receipt. To update your inventory, run the register tape through your optical reader. If you have purchased special items, you could indicate whether or not you wished to keep them in your regular listing. You might not care, for example, if you run out of kippered herring snacks — but then, you might.

Robot Grocery Truck

However, you still have to put the food away, and prepare your meals by hand. In *High Technology*, January 1983, Joe Quinlan's article on industrial rolling robots discusses automated storage-retrieval racks. These devices deliver items to workers, or more recently to robots, for delivery to other parts of the plant. The racks place the correct quantity of the right part into the robot's carrier, and it takes the parts to where they're needed.

Right now, such storage-retrieval systems are much too expensive for home use, but that won't always be true. Once home-sized units are produced, the price will come down — just as it has for the home computer, and the new crop of personal robots. Then you will keep all your canned goods in vending machine racks. Other foods can be packaged to facilitate automatic vending, as many are today for commercial machines. Each storage slot keeps its contents at the proper temperature, safe from rodents and insects. In such a system, the vending racks keep track of the inventory, so adjustment at the time of preparation is not necessary. If you want another bag of peanuts, but don't intend to cook with it, you won't have to tell the computer you're taking it. The rack itself knows it's gone, and adds the item to the shopping list when necessary. Ingredients like flour, sugar, and coffee are monitored by weight.

Since our future kitchen is a kind of vending machine, commonly used items could be delivered regularly, without placing a specific order. The robot truck will come up your alley, plug into your computer, read your shopping list, and deliver the requested goods directly into your home storage. Again, billing is unnecessary, and you can control the computerized order list to add chocolate drops, or not to buy any more green cheese.

Home grocery delivery is expensive only if few people make use of it. If the thousand or so most commonly consumed grocery items are delivered to everybody, the cost goes down. Walk-in stores are more expensive to maintain than warehouses. With ads transmitted on Videotex services, you can shop at home, and need never enter a grocery store. Even specialty items could be ordered in advance from suppliers in other parts of the world, delivered first to your grocery by distributors specializing in that kind of service.

CARROT FLOWERS (optional)



Use purchased or homemade oil and vinegar dressing for this fluffy vegetable salad —

- 1 ¼ cups shredded unpeeled zucchini
- 1 ¼ cups shredded carrots
- 4 lettuce leaves
- ¼ cup alfalfa sprouts
- 2 to 3 tablespoons oil and vinegar dressing
- Carrot flowers (optional)

Refrigerate the reserved vegetables in a tightly covered container. Line salad plates with lettuce. Layer zucchini and carrot on each plate. Place some alfalfa sprouts atop each serving. Pass dressing to serve with salad. If desired, garnish salads with "carrot flowers" made with paper-thin slices of carrot. Makes 4 servings.



Feed this recipe to your robot kitchen and create an infinite number of identical salads.

"Bubble, bubble, toil and trouble"

So — now your kitchen knows what food you have, how much of everything is in stock, what you need to reorder, and has an extensive library of modifiable recipes. You have the automated storage, so let's take this a step further. Why not let the kitchen do the cooking? Simply indicate by a typed or spoken command that you want spaghetti when you get home tonight. The robot inside the freezer puts the hamburger on thaw, at the right time so it won't spoil before cooking, then sautes it. Earlier, the kitchen began simmering the sauce in the robot pot, adding tomatoes and other canned ingredients from their bins (the kitchen opens the cans and disposes of the empties). Fresh vegetables are retrieved from their bins in the same way, cleaned, cut or diced, and added to the bubbling pot. The seasonings you have coded into your favorite spaghetti sauce recipe are the easiest part, and are always in the specified amounts. The computer sets the cooking time, stirs as necessary, and puts the pasta into the boiling water at just the right moment, even testing it for "tooth" so it's the way you like it. Everything is done your way. All you have to do is serve. If the meal is not perfect, you can reprogram to taste, giving you totally personalized gourmet quality. You are now in the business of food design, rather than just food preparation.

But we don't have to leave all our technology in the kitchen. Extending the technology to the dining room is easy. Place the entire kitchen machinery under the dining room floor and table. Tell your computer what you want to eat and when. At serving time, the top of the table opens up, and the food, some dished out and some to be served by you, comes up from the kitchen below.

Without lifting a finger, you have had total control of the preparation, specifying the ingredients, cooking times and temperatures, and special procedures. When you call for beef stroganof, the computer makes it your own personal way, in just the right quantities for the number of people dining. If you have guests who are on a restricted diet (such as low sodium) or who don't like mushrooms, the recipe can be adjusted for just their portions.

Accommodating special dietary requirements is an important capability of this system. The computer rejects requests for meals with too high a calorie count, and monitors problem components such as salt, cholesterol, or allergenic substances. It will tailor each person's servings for special needs, including special vitamin and mineral supplements for visiting grandmothers and grandchildren.

When your meal is finished, don't worry about the dishes. At your command, the table lowers, the dishes are processed automatically, and all is ready for your next meal.



World Connection



NETWORK CONVERSATIONS

by Tim Knight

This time we'll look at some of the interactive communications on the large computer networks. Among the services available are electronic mail, bulletin boards, group games and "CB" simulations. These two-way services are the computer equivalent of a telephone, while the one-way services are like reading an electronic newspaper. Both have their uses, but the potential of interactive communications on these networks has not received the attention it deserves.

Information services commonly are regarded as large databases — sources of information. However, instead of simply reading a message, you might want to send a response, or post your own notice on the bulletin board. Your computer becomes a means to transmit information, as well as a receiver.

Since my experience is primarily with CompuServe®, my examples will use its nomenclature. However, nearly everything available on CompuServe is on The Source®, and visa-versa. The only differences are in the ways commands are implemented. This should be no problem, since large networks always describe their own individual commands.

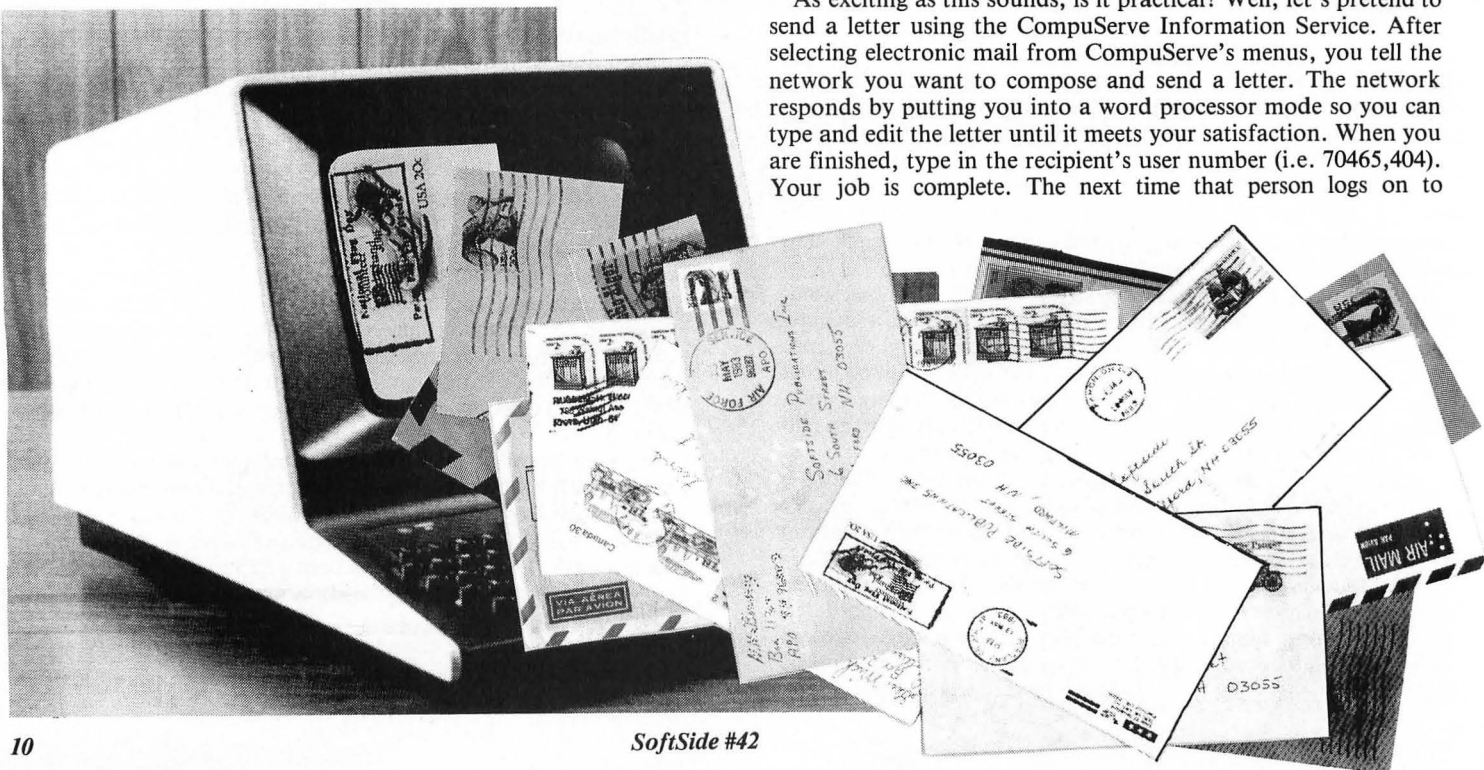
Electronic Mail

One of the most exciting possibilities for computers is electronic mail. As I write this, I am patiently waiting for an important letter to arrive via the US Postal Service. I have been waiting for that letter for five days, and have no real assurance it will arrive safely, no matter how late. If all mail were distributed electronically, I could receive and send all of my written information instantly, all over the world.

For an interesting perspective on electronic mail, compare the Postal Service with a hypothetical electronic mail system. If you want to send a letter via the Postal Service, you must first write the letter. Once that's over with, you place the letter in an envelope with a stamp affixed, put it in a mailbox, and then let the Postal Service take over. They will take your letter, and in due time, deliver it to the addressee's mailbox. For domestic First Class mail, this could take anywhere from one day to five days, or even more, and it's not always reliable.

Using electronic mail, on the other hand, is considerably more efficient. You would, as before, compose a letter, but instead of mailing the information, you simply send it to a computer network, "addressing" it to the person(s) you want to receive the letter. At the moment you tell the computer to send the letter, it is, for all practical purposes, "sent." Actually, until that person checks his "mailbox," the letter remains unread. However, the delivery is instantaneous.

As exciting as this sounds, is it practical? Well, let's pretend to send a letter using the CompuServe Information Service. After selecting electronic mail from CompuServe's menus, you tell the network you want to compose and send a letter. The network responds by putting you into a word processor mode so you can type and edit the letter until it meets your satisfaction. When you are finished, type in the recipient's user number (i.e. 70465,404). Your job is complete. The next time that person logs on to



CompuServe, the message "You have EMAIL waiting" appears on screen.

That seems practical, doesn't it? Fantastic, in fact. There is one small catch, though. Suppose you want to send a letter to your 97-year-old grandmother who doesn't happen to own a computer? Better get out the roll of stamps. Obviously, you may send and receive electronic mail only to those individuals who have access to computer terminals, use the same network, and log on regularly enough — once a day — to receive your mail. This narrows your mailing list somewhat. However, as more people buy computers and tie into the networks, the mailing list grows. In France and England, the postal services are considering placing a small computer in every home to send and receive mail. Since the Timex/Sinclair now lists for \$49.95, and typically is discounted to less than \$35, the day is fast approaching when nearly everyone could be equipped for electronic mail. The principal advantages of electronic mail are:

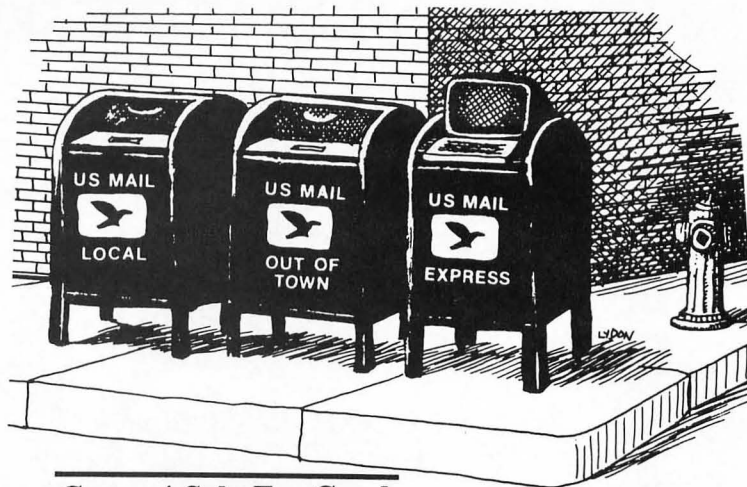
- Speed. No postal truck in the world can match the light-speed of electronic mail. As long as the recipient checks the "mailbox" frequently, the system is essentially instantaneous.
- Efficiency. Suppose you want to send a notice to ten separate people. Instead of typing out ten letters and sending them in ten envelopes with ten stamps, you need only type one letter, then ten user identification numbers. For that matter, you could send a message to one hundred or even one thousand different people.

Mailgrams and E-Com

The US Postal Service is beginning to move into this area with E-Com, which is particularly useful to companies sending out thousands of bills every month (utilities, credit cards). Since the bulk of the data remains the same from one bill to the next (only the name and address, and the amount due change from bill to bill) the computer needs to transmit only the information unique to each statement.

Mailgrams are a way around the "computerless society" syndrome. If you want to send a letter for next-day delivery, you may send it electronically via Mailgram and have an actual letter printed and delivered by the post office. On your end of the network, everything is the same, just like sending electronic mail. After Mailgram receives it, they print out a "real" letter which is delivered by the Postal Service. This costs \$5.15 a letter, which is more expensive than first class mail, but cheaper than Express Mail, or the overnight delivery services.

As you can see, Electronic Mail certainly has its advantages. The fact that not everyone has a computer may hinder its revolutionary potential, however. To answer the question, "Will electronic mail replace the Postal Service?" I would have to say "Doubtful." I think it will be a long time before the USPS accepts and promotes this method of delivery. Even if they did, you can't send that birthday gift to your cousin using electronic mail (although with the shopping services available on the networks, you could select a gift and have it sent directly to him). I do, however, believe that electronic mail will make larger and larger dents in the Postal Service's volume of letters, and I truly hope the networks will handle mail more efficiently than the USPS.



Comp 4 Sale Ex. Cond.

If you want to send a message to a large number of people, CompuServe has an even better service than electronic mail. It's called "BULLET," which stands for "bulletin board." Yes, it is similar to a bulletin board service, but I equate it more closely to the classified advertisements section in a newspaper.

BULLET has three distinct sections: SALE, WANTED, and NOTICE. To post a bulletin, use the command "post" followed by "sale," "wanted," or "notice." Finally, enter a keyword to identify whatever you want to sell, obtain, or announce. For instance, if I wanted to sell my TRS-80, I would type POST SALE TRS-80. My composed message then would be available to anyone who wanted to see it.

The great thing about BULLET is that you can find exactly what you are looking for, without scanning through irrelevant ads. If I were interested in purchasing an Atari computer, I would tell BULLET to "DISPLAY SALE ATARI," which instructs the network to tell me how many messages in the SALE section have the keyword ATARI. I could pick any one of them by typing in "READ" followed by the number of the message I wanted to read.

BULLET is a great way to announce things, an efficient way to sell things, and a sane way to go computer shopping. With efficient use of BULLET, you can acquire a large amount of information within a relatively short time.

The Interactive Game

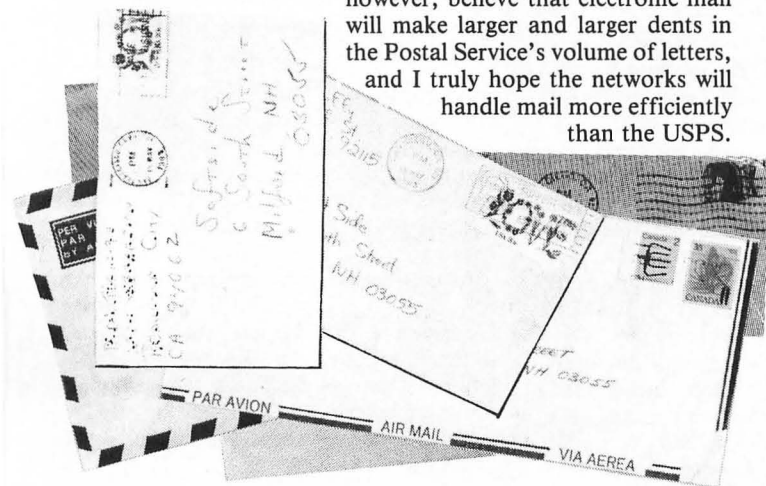
Group interactive gaming on networks involves a multitude of people playing a game with one another. It might be a futuristic space battle (as it most commonly is) or simply a game using simulated tanks. Whatever the case, gaming through a network is becoming increasingly popular. The rules and objects are too complicated to discuss here, but they require skill, patience, practice, and money. Playing these games certainly increases your monthly network bill, which may limit your participation. It all depends on how much enjoyment you derive from them.

Group games, however, do provide hours of fun since people from all over the country can become involved in battling one another. This leads to a lot of friendships, because people often enjoy getting together for a chat on the CB mode after playing a game. The social aspect of network gaming is especially enjoyable, and to see something so entertaining produce so many friends in distant places is nice.

Humanity and Computers

Computers are said to be cold, inhuman things. They are. However, the *people* who use them are not cold and inhuman. By using electronic mail, bulletin boards, and games, the users of networks get closer to one another and become even more human. The *World Connection* enhances human relationships by making communications easier and faster — worldwide. I hope more people will use the networks and that the range of services continues to expand and diversify for all of us.

55



Text Sampler

by Joe W. Roetze

Since I frequently use my personal computer as a word processor, I needed a program to check for fuzzy writing. Counting words and sentences is a menial task, so I decided to automate the process and use the computer to gauge sample text paragraphs for excess wordiness.

While many word processors can provide a word and paragraph count, a readability index requires more data and more tedious tabulation. To get an adequate idea of the text's complexity, you need to know such things as average word length, the number of words over three syllables, average words per sentence, and number of sentences per paragraph. Since commercial reading index programs are both expensive and scarce, I had no choice but to develop my own. This effort led to Text Sampler, which calculates the readability index.

The Fog Index

The purpose of Text Sampler is to calculate the reading index (i.e. fourth grade, high school sophomore, post-doctoral) of any written text. Readability measures how clearly the writer communicates his ideas to the reader. The basic formula for measuring readability is based upon the "Fog Index" formula developed by Robert Gunning many years ago. The original formula simply produced an arbitrary index number — the larger the number, the foggier the writing.

The reading index goes a step further and relates this to the typical reading ability at each grade level. Based on the premise that long sentences and polysyllabic words make writing more difficult to understand, the Fog Index helps make you aware of the clarity of your writing. You still must make judgments regarding the details of word choice and sentence structure. What the Text Sampler cannot do is evaluate style. Clarity of expression is not the same as personal style, or any of the subjective qualities which define great writers as diverse as Thomas Mann, Ernest Hemingway, or e.e. cummings.

Clarifying the Waters

The Text Sampler is easy to use — just type in a paragraph of text. For long articles and reports, you should sample several paragraphs. Type continuously, without using the RETURN key at sentence end. To simplify programming, I did not use word-wrap, so don't worry about breaks in the middle of words, because this affects only the display, not the program operation. Use the backspace key during the input cycle to correct typos. Use the RETURN or ENTER key only to exit the text input cycle.

The display clears at the end of the input cycle. As the program reads through the text in memory, it increments the data variables needed for the indexing formula, and puts the text back onto the screen.

After it encounters the RETURN or ENTER character, the computer calculates the readability index and displays the word, sentence, and long-word counts, followed by the reading index number. Fixing the text is up to you.

Anti-Fog Algorithm

Text Sampler's input cycle is a continuous loop which stores the ASCII value of each key entry using a keyboard scan. If you type a backspace or delete character, it erases the previous character from memory. The input cycle continues until you exit by typing RETURN or ENTER.

Data recall is equally simple. Using a FOR-NEXT loop, the routine retrieves each character, in turn, from storage. After temporarily placing it in a string or numeric variable (depending on your computer), it displays it again on the monitor. During this recall process, the program establishes the word count, checks word length, and counts individual sentences. The space between words provides the flag needed to identify a group of letters as an individual word. Punctuation marks are subtracted from the word letter count to increase accuracy of the long word counter. Pertinent data is stored in variables for later use in the index computation.

The readability index is computed upon completion of the recall loop. The original Fog Index was based on a 100 word sample using the following equation:

$$\text{FOG INDEX} = (\text{WORD COUNT} + \text{NO. LONG WORDS}) / \text{NO. OF SENTENCES}$$

Dividing the word count by the number of sentences tells you the average sentence length. A series of wordy sentences yields a high number. If the sentences contain long, multisyllable words, the index number increases. Thus, the higher the index number, the harder the writing is to understand.

To express the index in terms of reading ability at a particular grade level, multiply the Fog Index by 0.4, rounding off the result to an integer. The index is a rough estimate of the minimum educational level needed to understand the writing. In the listings, I use the formula in figure 1.

Although this index is somewhat arbitrary, it does provide a standard for evaluating anything from a memo to a formal report. Corporations have found that gaseous writing costs money. The military has revised its writing standards to meet the reading level of its personnel.

Most general audience publications aim for the sixth to twelfth grade range. Newspapers, for example, usually have an index of about eleven. Business memos and letters seldom should be written beyond the ninth grade level. In short, writing intended simply to convey ideas should be easy to understand.

Researchers have found that people prefer to read *below* their educational level. This does not mean that the average adult cannot read *beyond* this preferred level. It simply means that most readers have little difficulty *understanding* material written within the six to nine range. At a Fog Index of 13, the college freshman level, even a Ph.D.'s eyes may begin to glaze. A paper with an index above fifteen is comprehensible only to the most dedicated reader (probably the author). Tests indicate that the clearest writing has an index between six and nine.

Long, wordy sentences are the ruin of otherwise good writing. Most of us have difficulty breaking the habit of writing those stream-of-consciousness sentences. My Text Sampler is a valuable tool, which I use to avoid murky writing. The problems of appropriate word choice, and correct grammar remain for us humans to solve, because writing is an art. However, if the computer can provide time-saving shortcuts by checking spelling, or indexing reading level, clearer expression of our ideas becomes possible.

To quote Mark Twain, "I never write "metropolis" for seven cents a word when I can get the same price for "city!"

References:

Klare, G. R. "The Measurement of Readability." Ames, Iowa. Iowa State University Press, 1963.

Flesch, R. F. "A New Readability Yardstick." *Journal of Applied Psychology*, 1948.

Stratton, C. R. "Analyzing Technical Style." *Technical Communication*, Third Quarter, 1979.

FOG

**The fog comes
on little cat feet.**

**It sits looking
over the harbor and city
on silent haunches
and then moves on.**

by Carl Sandburg

From *Chicago Poems* by Carl Sandburg, Copyright 1916 by Holt, Rhinehart and Winston, Inc.; renewed 1944 by Carl Sandburg. Reprinted by permission of Harcourt Brace Jovanovich, Inc.



Figure 1

Readability Index Formula

$$0.4 \left[\frac{\text{No. of words}}{\text{No. of sentences}} + 100 \left(\frac{\text{No. of longwords}}{\text{No. of words}} \right) \right]$$

```

ATARI®

SS SS SS SS SS SS SS SS SS SS
SS
SS Atari BASIC SS
SS 'Text Sampler' SS
SS Author: Joe W. Roche SS
SS Translator: Rich Bouchard SS
SS Copyright (c) 1983 SS
SS SoftSide Publications, Inc SS
SS
SS SS SS SS SS SS SS SS SS SS

100 OPEN #2,4,0,"K:"
120 DIM TX$(FRE(0)-1000),SPACES$(30),D
U$(1)
130 QU$=CHR$(34)
135 SPACES$=""
"
140 GRAPHICS 0:GOTO 500
150 TP=TP+1:PRINT CHR$(C);:TX$(TP,TP)=
CHR$(C)
160 RETURN
170 GRAPHICS 0:PRINT "You may start in
put - ":PRINT
180 GET #2,C
190 IF C>=32 AND C<=122 THEN GOSUB 150
:GOTO 180
200 IF C=155 THEN 240
202 IF C<>126 AND C<>156 THEN 180
210 IF TP=0 THEN 180
220 TP=TP-1:IF PEEK(85)=PEEK(82) THEN
PRINT CHR$(30);CHR$(28);" ";CHR$(30);C
HR$(28);:GOTO 180
230 PRINT CHR$(126);:GOTO 180
240 GOSUB 150
250 GRAPHICS 0:CC=0:LW=0:SC=0:WC=0
260 FOR A=1 TO TP
270 C=ASC(TX$(A,A))
290 PRINT CHR$(C);
300 IF C<>32 THEN 340
310 IF CC>9 THEN LW=LW+1
320 IF CC>0 THEN WC=WC+1
330 CC=0:GOTO 370
340 IF C<>33 AND C<>46 AND C<>63 THEN
360
350 SC=SC+1:GOTO 310
360 CC=CC+1
370 NEXT A
380 IF SC=0 THEN SC=1
390 IF WC=0 THEN WC=1
400 RL=INT(0.4*(WC/SC+LW*100/WC))
410 PRINT :PRINT :PRINT "Word count is
:";SPACES$(1,17);WC
420 PRINT "Number of sentences:";SPACE
S$(1,11);SC
430 PRINT "Words with 10 or more lette
rs:";LW

```


Text Sampler, *continued*

```

440 PRINT "Reading level is: ";SPACES$(
1,14);RL
450 PRINT :PRINT "Do you want a printo
ut (Y/N) ";:GET #2,Q
460 IF Q=89 OR Q=121 THEN 620
470 PRINT :PRINT "Do you want to enter
more text (Y/N) ";:GET #2,Q
480 IF Q=89 OR Q=121 THEN 170
490 GOTO 730
500 GRAPHICS 0:PRINT " . . . TEXT
READABILITY . . .":PRINT
510 PRINT "Type text as sentences. End
each with "
515 PRINT "a period. Long sentences wi
ll ";QU$;"wrap"
520 PRINT "around";QU$;" and text inpu
t will continue"
525 PRINT "to fill the screen. The bac
kspace may"
530 PRINT "be used to correct errors."
:PRINT
560 PRINT "Enter text one paragraph at
a time.":PRINT
570 PRINT "## Important: Hit ";QU$;"RE
TURN";QU$;" to exit ##"
575 PRINT "##";SPACES$(1,12);"input cy
cle.";SPACES$(1,9);"##"
580 PRINT
590 PRINT "The Atari will then display
a"
595 PRINT "readability index."
600 PRINT :PRINT "Hit any key to begin
- ";:GET #2,Q
610 GOTO 170
620 OPEN #1,8,0,"P:":GRAPHICS 0:L=5:PR
INT SPACES$(1,L);:PRINT #1;SPACES$(1,L
);
630 FOR A=1 TO TP
640 C=ASC(TX$(A,A))
660 IF C=155 THEN PRINT #1;" ":PRINT :
L=5:PRINT #1;SPACES$(1,5);:PRINT SPACE
S$(1,5);:GOTO 680
670 PRINT CHR$(C);:PRINT #1;CHR$(C);:L
=L+1
680 IF L>=31 AND C=32 THEN L=1:PRINT #
1;" ":PRINT
690 NEXT A
700 PRINT #1;" ":PRINT
710 PRINT #1;"WORDS =";WC,"SENTENCES =
";SC
720 PRINT #1;"LONG WORDS =";LW,"READIN
G LEVEL =";RL
725 CLOSE #1:GOTO 470
730 PRINT :END

```

SWAT TABLE



LINES	SWAT CODE	LENGTH
100 - 202	XL	370
210 - 330	YP	377
340 - 450	VH	423
460 - 570	HL	516
575 - 680	XC	535
690 - 730	YB	154



IBM® PC

```

SS SS SS SS SS SS SS SS SS SS SS
SS SS
SS IBM-PC BASIC SS
SS 'Text Sampler' SS
SS Author: Joe W. Rocke SS
SS Translator: Rich Bouchard SS
SS Copyright (c) 1983 SS
SS SoftSide Publications, Inc SS
SS SS
SS SS SS SS SS SS SS SS SS SS SS
100 SCREEN 0:WIDTH 40:DEFINT A-Z
110 DIM A,A1,C,C#,CC,L,L1,LW,Q#,QU#,RL,S
C,TP,TV,WC
120 CLS:PRINT "Do you want an 80 column
display? ";:LINE INPUT Q#
130 IF LEFT$(Q#,1)="Y" OR LEFT$(Q#,1)=CH
R$(121) THEN W=80 ELSE IF LEFT$(Q#,1)="N
" OR LEFT$(Q#,1)=CHR$(110) THEN W=40 ELS
E 120
140 WIDTH W:QU#=CHR$(34):TP=1:TV=1
150 DIM TX((FRE(0)-1000)/2)
160 CLS:GOTO 520
170 PRINT C#;:TX(TP)=TX(TP)+ASC(C#)*TV:I
F TV=1 THEN TV=256 ELSE TV=1:TP=TP+1
180 RETURN
190 CLS:PRINT"You may start input - ":PR
INT:LOCATE ,,1
200 C#=INKEY$:IF C#="" THEN 200
210 IF C#>="" THEN 60SUB 170:GOTO 200
220 IF C#=CHR$(13) THEN 260 ELSE IF C#<>
CHR$(8) AND C#<>CHR$(0)+"S" AND C#<>CHR#
(0)+"K" THEN 200
230 IF TP=1 AND TV=1 THEN 200
240 IF TV=256 THEN TV=1:TX(TP)=0 ELSE TV
=256:TP=TP-1:TX(TP)=TX(TP)AND 255
250 PRINT CHR$(29);" ";CHR$(29);:GOTO 20
0
260 GOSUB 170:TX(TP)=TX(TP)+26*TV
270 CLS:CC=0:LW=0:SC=0:WC=0
280 FOR A=1 TO TP:A1=0

```

```

290 IF A1=0 THEN C=(TX(A) AND 255) ELSE
C=INT(TX(A)/256)
300 IF C=26 THEN 400
310 PRINT CHR$(C);
320 IF C<>32 THEN 360
330 IF CC>9 THEN LW=LW+1
340 IF CC>0 THEN WC=WC+1
350 CC=0:GOTO 390
360 IF C<>33 AND C<>46 AND C<>64 THEN 38
0
370 SC=SC+1:GOTO 330
380 CC=CC+1
390 IF A1=0 THEN A1=1:GOTO 290 ELSE NEXT
A
400 IF SC=0 THEN SC=1
410 IF WC=0 THEN WC=1
420 RL=INT(.4*(WC/SC+LW*100/WC))
430 PRINT:PRINT"Word count is: ";TA
B(31);WC
440 PRINT"Number of sentences: "; TAB(31)
;SC
450 PRINT"Words with 10 or more letters:
";TAB(31);LW
460 PRINT"Reading level is: ";TAB(31);RL
470 PRINT:LINE INPUT"Do you want a print
out? (Y/N) ";Q#
480 IF LEFT$(Q#,1)="Y" OR Q#=CHR$(121) T
HEN 640
490 PRINT:LINE INPUT"Do you want to ente
r more text? (Y/N) ";Q#
500 IF LEFT$(Q#,1)="Y" OR ASC(Q#)=121 TH
EN TX(TP)=TX(TP)-26*TV:GOTO 190
510 GOTO 770
520 CLS:PRINT TAB(15+10*(W=40));". . . T
EXT READABILITY . . .":PRINT
530 PRINT"Type text as sentences. End ea
ch with a period."
540 PRINT
550 PRINT"Long sentences will ";QU$;"wra
p around";QU$;" ";and text input will c
ontinue"
560 PRINT"to fill the screen. The back
space ";may be used to correct errors."
570 PRINT
580 PRINT"Enter text one paragraph at a
time.":PRINT
590 PRINT"Important: Hit ";QU$;"RETURN";
QU$;" ";to exit input cycle."
600 PRINT
610 PRINT"The IBM-PC will then display a
";"readability index."
620 PRINT:PRINT"Hit ";QU$;"RETURN";QU$;"
to begin - ";:LINE INPUT Q#
630 GOTO 190
640 CLS:L=5:L1=5:PRINT TAB(L);:LPRINT TA
B(L);
650 FOR A=1 TO TP:A1=0

```

continued on page 16

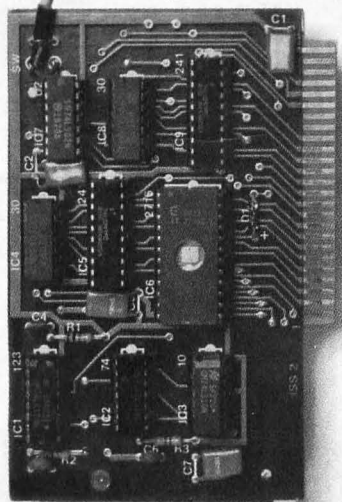
NEW FOR APPLE II AND IIe

WILDCARD™

MAKES BACK-UP COPIES OF PROTECTED SOFTWARE QUICKLY, EASILY, WITH JUST A PUSH OF A BUTTON.

New software locking schemes have rendered even the latest generation of copy programs virtually unusable. Locksmith™, Nibbles Away™ and other "Nibble copiers" require complicated parameter settings, much patience and great effort to use. More often than not, the results are disappointing. WILDCARD is different. Rather than copying disks track by track, WILDCARD ignores the disk and any copy protection encrypted on it. Instead, WILDCARD takes a snapshot of memory in your Apple® II.

Now you can make back-up copies of protected software with the push of a button.



Software is not copy protected. System requirements: Apple II Plus with 64K and DOS 3.3 or Apple IIe. Franklin Ace also supported.

*Wildcard does not operate with CP/M® or other microprocessor based software.

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- Copies 48K memory resident software, most 64K software.
- No programming experience or parameters necessary.
- Backs up DOS 3.2 and DOS 3.3 disks.
- Creates DOS 3.3 unprotected and autobooting disks.
- WILDCARD lives in any slot. Undetectable by software.
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Text Sampler, continued

```

660 IF A1=0 THEN C=(TX(A) AND 255) ELSE
C=INT(TX(A)/256)
670 IF C=26 THEN 730
680 IF C=13 THEN L=5:L1=5:LPRINT " :LPRI
NT TAB(L);:PRINT:PRINT TAB(L);:GOTO 700
690 PRINT CHR$(C);:LPRINT CHR$(C);:L=L+1
:L1=L1+1
700 IF L>=70 AND C=32 THEN L=0:LPRINT "
710 IF L1>=W-10 AND C=32 THEN L1=0:PRINT
720 IF A1=0 THEN A1=1:GOTO 660 ELSE NEXT
A
730 LPRINT " :PRINT
740 LPRINT TAB(5);"Words =" ;WC;TAB(30);"
Sentences =" ;SC
750 LPRINT TAB(5);"Long words =" ;LW;TAB(
30);"Reading level =" ;RL
760 GOTO 490
770 PRINT:END
    
```



LINES	SWAT CODE	LENGTH
100 - 210	JQ	444
220 - 330	DE	387
340 - 450	SV	318
460 - 560	EH	516
570 - 680	QV	410
690 - 770	WK	257



```

SS SS SS SS SS SS SS SS SS SS SS
SS
SS Applesoft BASIC SS
SS 'Text Sampler' SS
SS Author: Joe W. Roche SS
SS Translator: Fred Condo SS
SS Copyright (c) 1983 SS
SS SoftSide Publications, Inc SS
SS SS
SS SS SS SS SS SS SS SS SS SS SS
    
```

```

100 HIMEM: 32000:B$ = CHR$(8)
110 MA = 32000: PRINT CHR$(21): HOME
: GOSUB 490
120 HOME : VTAB 7: PRINT "PLEASE
BEGIN TEXT ENTRY:"
130 GET C$
140 A = ASC (C$): IF A = 8 OR A =
127 THEN 170
150 IF A < 32 AND A < > 13 THEN
130
160 GOTO 190
    
```

```

170 IF MA > 32000 THEN PRINT B$;
" ";B$;:MA = MA - 1: GOTO 130
180 GOTO 130
190 POKE MA,A: IF A = 13 THEN 230
200 PRINT C$;
210 MA = MA + 1
220 GOTO 130
230 HOME :CC = 0:LW = 0:SC = 0:WC
= 0
240 FOR A = 32000 TO MA - 1:C$ =
CHR$( PEEK (A)): PRINT C$;:
IF C$ < > " " THEN 290
250 IF CC > 9 THEN LW = LW + 1
260 IF CC > 0 THEN WC = WC + 1
270 CC = 0
280 GOTO 340
290 IF C$ = "." OR C$ = "?" OR C$
= "!" THEN 310
300 GOTO 330
310 SC = SC + 1
320 GOTO 250
330 CC = CC + 1
340 NEXT A
350 IF SC = 0 THEN SC = 1
360 IF WC = 0 THEN WC = 1
370 RL = INT (.4 * (WC / SC + LW *
100 / WC))
380 PRINT : PRINT
390 PRINT "WORD COUNT:" ; TAB( 20)
;WC
400 PRINT "SENTENCE COUNT:" ; TAB(
20);SC
410 PRINT "LONG WORDS:" ; TAB( 20)
;LW
420 PRINT "READING LEVEL:" ; TAB(
20);RL
430 PRINT : PRINT "DO YOU WANT A
PRINTOUT (Y/N)? " ;: GET Q$:Q =
ASC (Q$):Q$ = CHR$( Q - 32 *
(Q > 96 AND Q < 123))
440 IF Q$ = "Y" THEN 560
450 PRINT : PRINT "DO YOU WANT TO
ENTER": PRINT "MORE TEXT (Y/
N)? " ;: GET Q$
460 Q = ASC (Q$):Q$ = CHR$( Q -
32 * (Q > 96 AND Q < 123)): IF
Q$ = "Y" THEN POKE MA,13:MA =
MA + 1: GOTO 120
470 END
480 Q = ASC (Q$):Q$ = CHR$( Q -
32 * (Q > 96 AND Q < 123))
490 HOME :A$ = "...TEXT READABILI
TY...": PRINT TAB( 21 - LEN
(A$) / 2);A$
500 PRINT "TYPE TEXT AS SENTENCES
. END EACH WITH A PERIOD. LON
G SENTENCES WILL WRAP AROUND,
";
    
```

```

510 PRINT "WHICH IS NORMAL, AND T
EXT ENTRY WILL CONTINUE TO
FILL THE SCREEN. USE THE
LEFT ARROW OR DELETE KEY TO C
ORRECT ERRORS. ENTER THE
TEXT ONE PARAGRAPH AT A TIME.
"
520 PRINT : PRINT " ...PRESS RETU
RN TO STOP TEXT ENTRY..."
530 PRINT "PRESS THE SPACE BAR TO
BEGIN>";
540 GET Q$: IF Q$ < > " " THEN 5
40
550 RETURN
560 HOME :L = 5: PR# 1
570 PRINT CHR$(9)"80N"
580 PRINT " ";
590 FOR A = 32000 TO MA - 1:C$ =
CHR$( PEEK (A)): PRINT C$;
600 L = L + 1: IF NOT (L > = 58 AND
C$ = " ") THEN 620
610 PRINT :L = 5
620 NEXT A: PRINT " "
630 PRINT SPC( 4);"WORDS=" ;WC: PRINT
SPC( 4);"SENTENCES=" ;SC: PRINT
SPC( 4);"LONG WORDS=" ;LW: PRINT
SPC( 4);"READING LEVEL=" ;RL
640 PRINT CHR$(12);: PR# 0
650 GOTO 450
    
```



LINES	SWAT CODE	LENGTH
100 - 210	TC	236
220 - 330	BX	208
340 - 450	FS	340
460 - 530	MT	507
540 - 650	EL	273



continued on page 18

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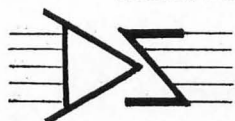
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TRS-80®

Text Sampler, *continued*

```

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SS                                     SS
SS      TRS-80 BASIC                   SS
SS      'Text Sampler'                 SS
SS      Author: Joe W. Rocke          SS
SS      Copyright (c) 1983            SS
SS      SoftSide Publications, Inc    SS
SS                                     SS
SS SS SS SS SS SS SS SS SS SS SS
    
```

```

100 CLEAR50:DEFINT A-Z
110 DIM A, A1, C, C$, CC, L, LW, Q$, QU$, RL, SC, TP, TV, WC
120 Q$=CHR$(34):TP=1:TV=1
130 DIM TX((MEM-1000)/2)
140 CLS:GOTO500
150 PRINT C$;:TX(TP)=TX(TP)+ASC(C$)*TV:IF TV=1 THEN TV=256 ELSE TV=1:
P=TP+1
160 RETURN
170 CLS:PRINT "YOU MAY START INPUT - ":PRINT
180 PRINT CHR$(14);:C$=INKEY$:PRINT CHR$(415);:IF C$="" THEN 180
190 IF C$=" " THEN GOSUB 150:GOTO 180
200 IF C$=CHR$(13) THEN 240 ELSE IF C$<>CHR$(8) THEN 180
210 IF TV=1 AND TV=1 THEN 180
220 IF TV=256 THEN TV=1:TX(TP)=0 ELSE TV=256:TP=TP-1:TX(TP)=TX(TP) AND
255
230 PRINT C$;:GOTO 180
240 GOSUB 150:TX(TP)=TX(TP)+26*TV
250 CLS:CC=0:LW=0:SC=0:WC=0
260 FOR A=1 TO P:A1=0
270 IF A1=0 THEN C$=(TX(A) AND 255) ELSE C$=INT(TX(A)/256)
280 IF C$=26 THEN 380
290 PRINT CHR$(C$);
300 IF C$<>32 THEN 340
310 IF C$>9 THEN LW=LW+1
320 IF C$>0 THEN WC=WC+1
330 CC=0:GOTO 370
340 IF C$<>33 AND C$<>46 AND C$<>63 THEN 360
350 SC=SC+1:GOTO 310
360 CC=CC+1
370 IF A1=0 THEN A1=1:GOTO 270 ELSE NEXT A
380 IF SC=0 THEN SC=1
390 IF WC=0 THEN WC=1
400 RL=INT(.4*(WC/SC+LW*100/WC))
410 PRINT:PRINT:PRINT "WORD COUNT IS: ";TAB(30);WC
420 PRINT "NUMBER OF SENTENCES: ";TAB(30);SC
430 PRINT "WORDS WITH 10 OR MORE LETTERS: ";TAB(30);LW
440 PRINT "READING LEVEL IS: ";TAB(30);RL
450 PRINT:INPUT "DO YOU WANT A PRINTOUT (Y/N) ";Q$
460 IF LEFT$(Q$,1)="" THEN Q$=CHR$(121) THEN 620
470 PRINT:INPUT "DO YOU WANT TO ENTER MORE TEXT (Y/N) ";Q$
480 IF LEFT$(Q$,1)="" THEN Q$="DRASC(Q$)=121 THEN TX(TP)=TX(TP)-26*TV:GOTO 170
490 GOTO 730
500 CLS:PRINT TAB(15);". . . TEXT READABILITY . . .":PRINT
510 PRINT "TYPE TEXT AS SENTENCES. END EACH WITH A PERIOD."
520 PRINT
530 PRINT "LONG SENTENCES WILL ";Q$;" WRAP AROUND";Q$;" AND TEXT
INPUT"
540 PRINT "WILL CONTINUE TO FILL THE SCREEN. THE BACKSPACE"
550 PRINT "MAY BE USED TO CORRECT ERRORS.":PRINT
560 PRINT "ENTER TEXT ONE PARAGRAPH AT A TIME.":PRINT
    
```

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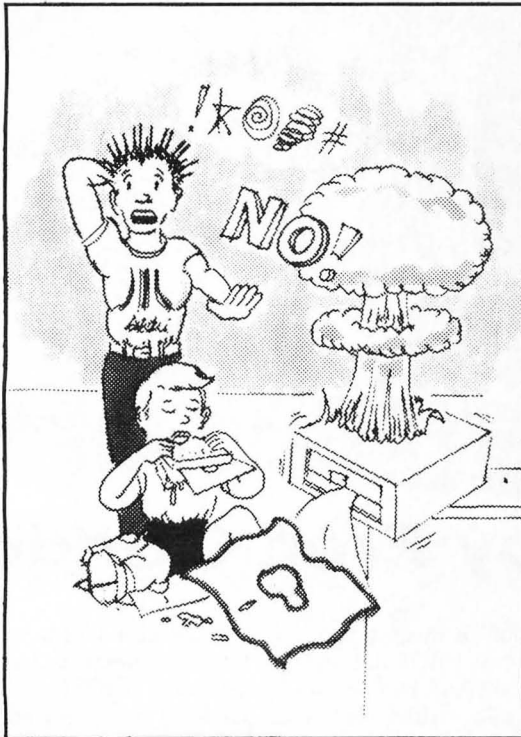
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Text Sampler, continued

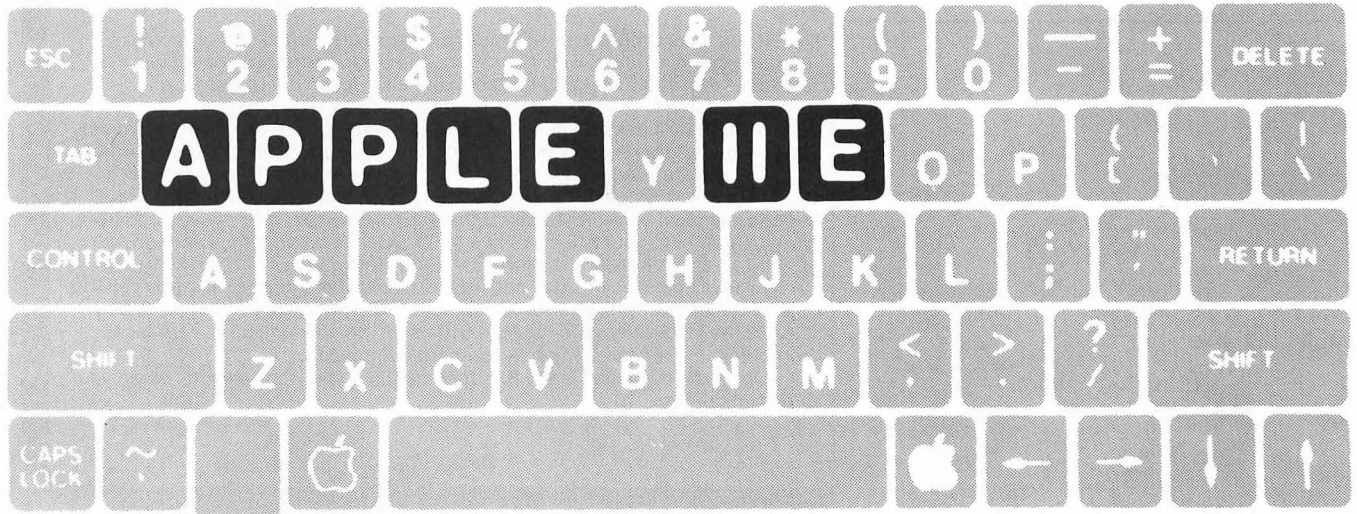
```
570 PRINT:## IMPORTANT: HIT ";QU$;"ENTER";QU$;" TO EXIT INPUT CY
CLE ##"
580 PRINT
590 PRINT"THE TRS-80 WILL THEN DISPLAY A READABILITY INDEX."
600 PRINT:PRINT"HIT ";QU$;"ENTER";QU$;" TO BEGIN - ";:INPUTQ$
610 GOTO170
620 CLS:L=10
630 FORA=1TODT:P:A1=0
640 IFA1=0THENC=(TX(A)AND255)ELSEC=INT(TX(A)/256)
650 IFC=26THEN700
660 IFC=13THENLPRINT" ";PRINT:L=10:GOTO680
670 PRINTTAB(L-5);CHR$(C);:LPRINTTAB(L);CHR$(C);:L=L+1
680 IFL=58ANDC=32THENLPRINT" ";PRINT:L=5
690 IFA1=0THENA1=1:GOTO640ELSENEXTA
700 LPRINT" ";PRINT
710 LPRINTTAB(5);"WORDS =" ;WC;TAB(30);"SENTENCES =" ;SC:LPRINTTAB
(5);"LONG WORDS =" ;LW;TAB(30);"READING LEVEL =" ;RL
720 GOTO470
730 PRINT:END
```



LINES	SWAT CODE	LENGTH
100 - 210	RR	323
220 - 330	QH	276
340 - 450	CP	332
460 - 570	WR	524
580 - 690	DA	316
700 - 730	DQ	121



Apple's New Twist:



Reviewed by Fred Condo

The Apple IIe is the latest version of the Apple II. The introductory package includes:

- 64K RAM
- One disk drive
- Green-phosphor monitor
- Monitor stand
- 40/80-column display
- Built-in system diagnostics
- Suggested retail price: \$1995

In addition to this, you get a full-ASCII keyboard, complete with lower-case letters and *real* shift keys. The Reset key is out of the way, too. And best of all, the keyboard layout is *standard* typewriter-style, with Apple's special keys in convenient but unobtrusive locations. Unlike some other manufacturers, Apple has avoided unusual key placements, such as inserting a special key between Z and the left shift key. Anyone can type on the IIe's keyboard without a long period of "getting used to the funny keyboard." Does this sound trivial? Set a touch-typist in front of an IBM or DEC keyboard, and watch him or her fumble at it, continually typing the funny character that is where the left-hand shift key ought to be, and forever hitting the wrong key when trying to reach a Return key that has been placed in the next county. How much speed and efficiency must we sacrifice to get used to a new format? I laud Apple for not confusing typists all over America and the world. The international model has a character chip which generates nearly all the special marks for European languages.

Other important features of the keyboard are raised dots on the home keys, a mechanically locking CAPS LOCK key whose state the user can see easily, four arrow keys for cursor movement, a Delete and two "Apple" keys that can be used in Apple's standard user interface (more on this later).

Like later Apple II's, the IIe requires pressing both Control and Reset to reset the computer. The IIe has three types of Reset. The first is the normal Reset I just mentioned. The second forces a "cold start" of the computer. This is equivalent to turning the computer off and back on again, but eliminates the electronic strain from the initial power surge, and saves the power supply. The



Note: In this article, "Apple II" means the II or the II+.



“Apple Presents Apple”

The Demonstration Program for the Apple IIe.

Reviewed by Carolyn Nolan

What a charming and painless introduction to an Apple for someone who has never touched a computer, or for someone accustomed to one computer but who must use whatever is on the desk — which turns out to be an Apple IIe. I had become comfortable with “another” computer and hated to sacrifice it to the new *SoftSide* standard.

“It” was glamorous despite its vagaries, and the new Apples seemed like doilies by comparison — compact and color coordinated. I knew how to boot the disk and little more. Fortunately, that’s all you need to begin this little adventure by J. D. Eisenberg and Bruce Tognazzini. I was prepared for a Command Summary or something. What I got was entertained and educated.

The program meets all the requirements for a Game for Cooperation and Growth (*SoftSide*, Issue 35). The Apple’s responses are friendly, and the prompts feature understated positive

reinforcers. To start, a IIe keyboard scrolls down the screen, and then the fun begins as text automatically appears a character at a time, just above the keyboard. You notice that the keys on the screen light up with each additional character. On second glance, you realize the instruction has already begun, as you watch the keyboard and see that each lit key signals the next character or effect to appear on the screen.

Taking nothing for granted, the program tutors the novice in some of the keyboard’s features, beginning with the RETURN key which is a logical starting point. After that, the program allows you to select the other topics from a menu (quietly introducing the concept of menus). You learn why IO is not ten, how to get a CATALOG and RUN a program, and what “friendly” and “unfriendly” mean; and you meet the new open- and closed-Apple function keys.

A fanciful game interlude, in which you guide cleverly animated rabbits or gnomes through a maze, provides practice with the arrow keys. The characters go “blat, bonk, urg” and “poit” when you run them into walls, floors and ceilings. Those absolutely new to the world of high resolution graphics may feel like rushing out to the nearest software vendor to buy a few games after executing this module of the demonstration. The mix of clarity, humor and information, all highlighted with sound and graphics, is impressive.

Introductions are important in relationships, and Apple certainly appreciates that. When you finish the thirteen menu options, which include instruction on disk operations and ESCaping and RESETting, you are comfortable at the keys, and subconsciously confident that you are ready to tackle *Applewriter II* and the *Personal Filing System*. And you are ready.

third type of Reset starts the System Diagnostics. You accomplish the latter two Resets by holding down Control, Reset, and one or the other of the two function keys. Resetting the computer is easy, and well-nigh impossible to do by mistake.

Character Clarity

The Monitor III, as its name suggests, originally was meant for the Apple III. It is now part of Apple’s introductory package for the IIe. Its styling is Apple tan and brown, with the familiar Apple logo on the front panel, which provides an on-off switch, a red power indicator lamp, and a contrast control. The monitor rests perfectly atop a stand, which straddles the rear of the IIe. This arrangement allows you to remove the computer’s cover without having to remove the monitor.

The monitor has high-persistence green phosphors, which make for a flicker-free, high-resolution, comfortable display. The image on the monitor is crisp, and even 80-column characters are easy to read. In addition, the screen has a nylon mesh on its surface, which reduces glare.

An added benefit of the Apple II redesign is that the 40- and 80-column fonts are actually the same — the same ROM generates both, so they both contain the same number of dots. This means that the 80-column font has well shaped, highly legible characters. The recent crop of word processors which use the hi-res graphics to make 80-columns without an adapter card do not produce characters as readable as these. What’s more, the new lower-case letters are quite attractive and legible. Unlike some of the lower-case character sets on the market for the old Apple II, the new one does not “float” one dot above the baseline, and does have descenders.



The Apple’s Core

Let’s pull my IIe out from under the monitor stand now, and look inside. Before we pull off the cover, we see that the size, design, and shape of the IIe have hardly changed from those of the old Apple II. As we lift the IIe, we notice that it is several pounds lighter than the II.

When we remove the cover, some things are instantly familiar to anyone who has seen the inside of an Apple II. The gold box on the left is the power supply, and the row of connectors at the back is the set of peripheral expansion slots. The motherboard, however, is radically different. The most striking aspect is the vast expanse of empty circuit board. Apple has shrunk 64K of RAM into just a single row of chips at the front of the board, and 80 support chips have become just two custom ICs, the MMU (memory management unit) and the IOU (input/output unit). Applesoft®, the Monitor, the 80-column firmware, and the System Diagnostics all reside in two ROM chips. The hardware is very different, yet it is fully compatible with the enormous software bank available for the old Apple II. Apple has even provided a solder pad for the shift-key modification, so software written to take advantage of this can be made to run on the new machine. Benefits of the reduced number of chips are higher reliability, lower power consumption, and less heat. You probably won’t need a fan for your IIe.

Slot zero is gone. The Language Card is obsolete, because it is “built-in” through the wizardry of the 64K RAMs and the MMU. An extra peripheral slot, known as the “Auxiliary Connector,” is where you plug in Apple’s 80-column display card. The optional Extended 80-column card has an extra 64K of RAM on it. This card gives you 128K with programs, like *Multiplan*® and *VisiCalc*®, which are designed to take advantage of the extra memory. A short row of pins is the connector for an optional numeric keypad.

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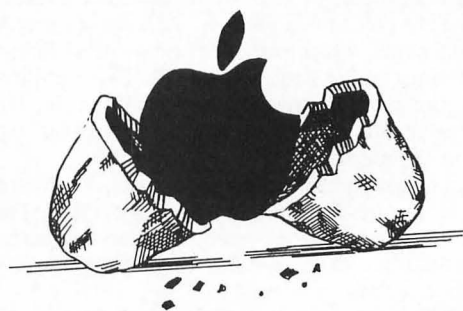
Apple IIe continued

Peripheral Attachment

The back panel, out of which protrude any cables connecting your Apple to peripherals, is also different. For one thing, it is so well shielded that I can run my computer right next to my TV, which I use as a color monitor. You still need an RF modulator to use a TV with the Apple. This plugs onto a set of pins in a cramped location near the internal Game I/O Connector. Although I don't watch TV or listen to FM when I use the computer, the lack of interference means I'm not obliterating my neighbors' reception, either.

The back panel has twelve holes in it, each with its own plastic cover, so that the panel presents an attractive, integrated appearance. To install a peripheral device, you just pop out the appropriate plastic cover and install the cable. In many cases, you can put a D-type connector in the hole, so you can detach the peripheral device easily without removing the slot card. In the case of a disk drive, a shielding clamp goes into the back-panel hole to prevent the luxuriously long disk-drive cable from emitting radio-frequency interference. The disk drive and controller card are precisely the same as those for the Apple II. My disk system is installed in good, old slot 6. Slot 1, now the leftmost because of the absence of slot 0, is where I will put my printer, which is now just a file in one of the IRS's computers. My modem, another wish, will probably go into slot 2 or slot 4. I can't use slot 3, because the 80-column card in the Auxiliary Connector overrides that one. Speaking of slots, any well-designed card for the Apple II will work in the IIe so long as it has no cables meant to plug into the motherboard. The radical redesign of the board makes such cards incompatible with the IIe.

Next to the holes for peripherals are the cassette connectors, for those still using tape as a data storage medium. Next to those is the video connector. The cable to the monitor goes in there. On the other side of the cassette jacks is a DB-9 connector. This is an extension of the Game I/O port, which is still in its inconvenient place on the motherboard. This new game connector fits the new (optional) Apple Joystick IIe (\$49.95), which features two buttons and optional self-centering. You can install your joystick semi-permanently with a pair of small screws. If you play many games requiring game paddles, though, you won't want to do this, as you must remove the joystick to use paddles. One of the multitude of game port extenders is still a good investment for the avid gamer. No doubt a plethora of devices to switch between joystick and paddles designed for the IIe soon will appear on the market.



The Apple In a Nutshell

So, Apple has done just about everything right with their new revision. The keyboard, the most important interface between user and computer, is excellent. The computer's "innards" are fewer and more reliable. The computer generates no objectionable TV interference. There is a convenient place to plug in a joystick. Apple has gone to great lengths to ensure compatibility with the previous members of the Apple II family.

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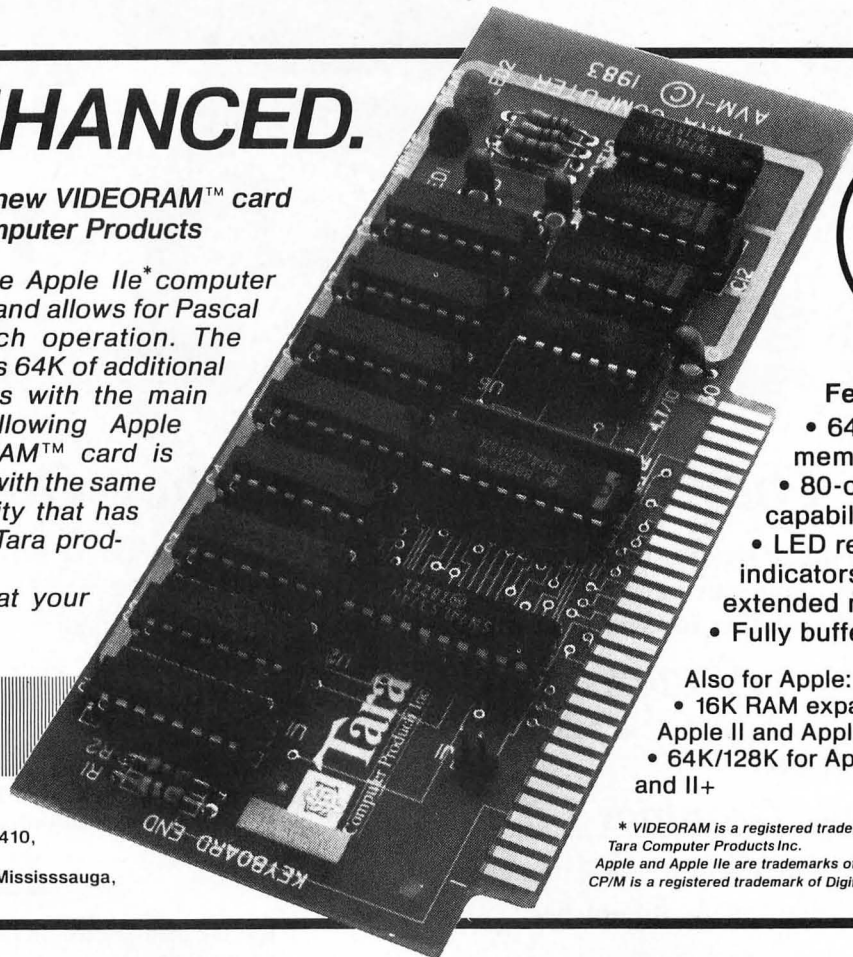
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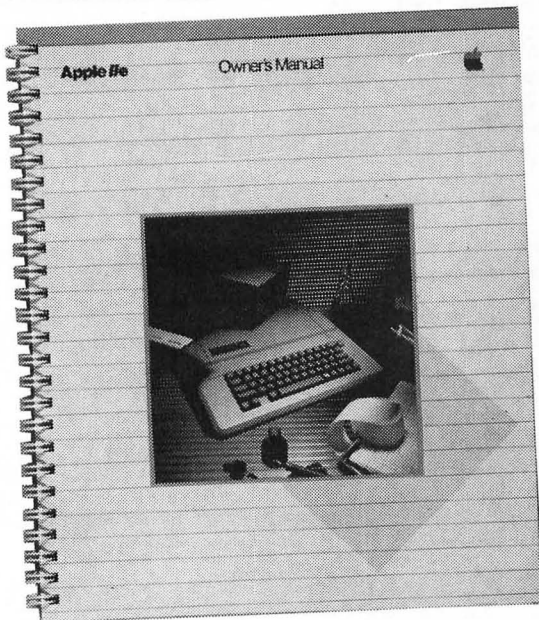
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The things wrong with the Apple IIe are insignificant. The regular Game I/O Connector ought to be out on the back panel along with the new DB-9 connector, and the RF modulator needs more room inside the case.



Only a very basic, general user's manual comes with the Apple IIe. The Applesoft BASIC Programmer's Reference Manual, Applesoft Tutorial, and Reference Manual, which were included free with the Apple II, are now an extra-cost option, totalling \$80. This money gets you new, expanded versions of the high quality manuals for which Apple is famous. The manuals incorporate much of the information that Apple II users have amassed over the years. The Applesoft Tutorial has grown enormously, and is

accompanied by a disk of sample programs, including standardized input and menu routines and a routine that determines what variety of Apple it is running on. All the manuals have a smattering of humor that makes them less tedious. Several minor typographical errors mar the manuals, but the information in them is complete and accurate.

A small, but significant, manual is not included in the \$80 set — the *Design Guidelines*. The second section, which discusses software design, is particularly important. In this little booklet, which I got free, Apple makes an attempt to standardize user input and menu design. Although Apple's standard is not perfect, it is a giant stride in a field where standardization has been almost non-existent. Anyone who programs or writes documentation for any computer ought to read this booklet. A machine as nice as the IIe deserves well-designed, friendly software, and the *Design Guidelines* are a valuable guide to producing it.

Apple practices what it preaches: along with the IIe comes an introductory program for Apple neophytes, "Apple Presents... Apple." (See sidebar.) Part of the procedures used in making this program user-friendly are described in the *Design Guidelines*. The programmers' efforts paid off: members of the *SoftSide* editorial staff new to Apples were filled with delight by this whimsical, gentle introduction. All computer programs ought to be as ergonomically designed as this one. "Apple Presents... Apple" is sure to make quite a number of people fall in love with the little brown computer from Cupertino.

Should you trade your Apple II for a IIe? If you have a lot of software that uses the shift-key modification, or if you have a lot of money invested in slot cards that are incompatible with the IIe or duplicate its features, you probably shouldn't. Since Apple II's are now going for less than \$900 for the main unit, should you choose the old model or the new? When rumors were circulating that Apple might delay the introduction of the IIe, I almost bought a low-priced II from a mail-order house. I'm very glad I didn't, and I can confidently recommend that you choose the new IIe.



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Financial Operating System

by J. M. Keynes

“THE HAVE YOUR CAKE AND EAT IT TOO INVESTMENT”

The brokerage business provides little education about the finest investment medium for most investors. I speak of *convertible securities* which include certain bonds and preferred stocks. Had you randomly invested \$10,000 in convertibles in 1972, today it would show a profit of over 50 percent. A like amount, randomly invested in common stock, would show a loss of ten percent. In fact, \$10,000 invested in carefully chosen convertibles since 1972 would be worth over \$250,000 today! I have taken the figures from The Value Line Convertible Survey. You may wonder why your broker never mentioned an investment wherein a chimpanzee (making random decisions) is favored to outperform the stock market? Chances are he has little expertise in this area.

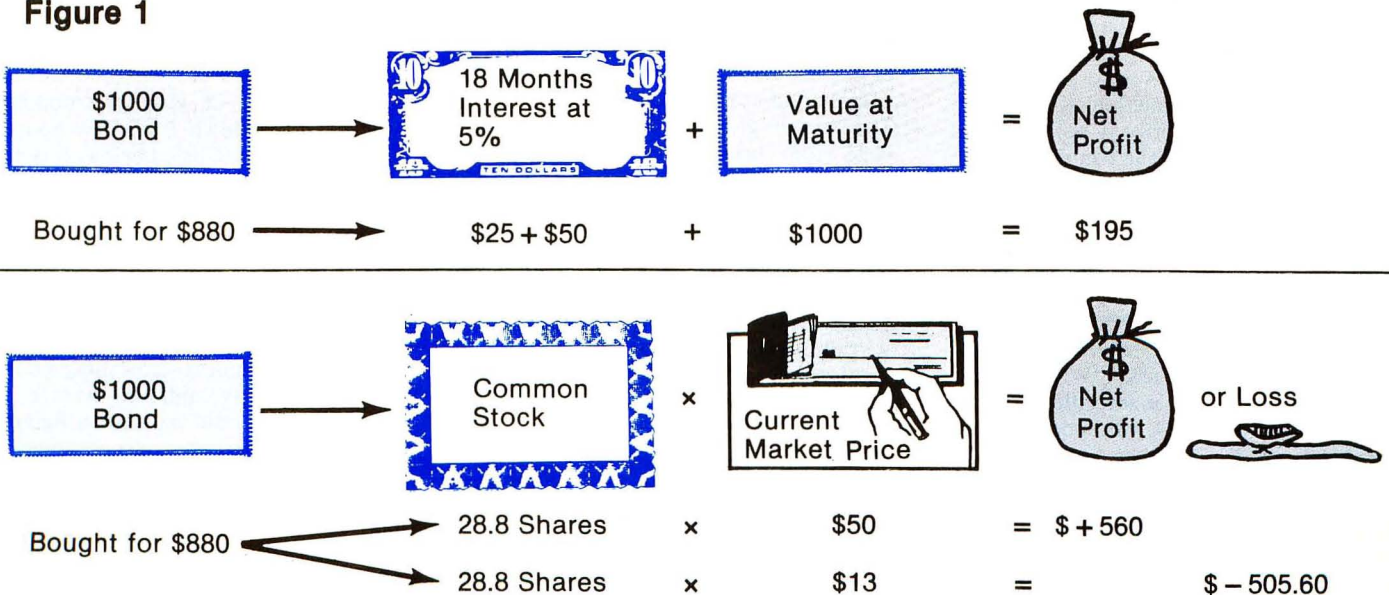
I seldom find a brokerage firm recommending a convertible. Brokers are aware of the advantages of convertible securities

but they are *scarce*. You see, most of the convertibles issued are of relatively small size (number of bonds or preferred stock outstanding), and, should a major firm put out a buy recommendation, chaos could result. An example is in order. In April 1980 a bond issued by Allegheny Ludlum was selling for 88 or \$880 per bond. The bond carried a five percent coupon (paid \$50 in interest yearly) and matured October 1, 1982. It was convertible, at the option of the bondholder, into 28.8 shares of the issuer's common stock.

At that time Allegheny Ludlum common was selling for \$26 per share. The value of the bond, if converted to common stock was 28.8×26 or \$748.80. So was it a good deal at 88? Not good, but spectacular! Examine the analysis: The issuing company had paid dividends on their common stock each year since 1935 and was in an excellent financial condition, so the bond interest

payments and the redemption on October 1, 1982 must have been considered safe. If nothing good happened to the price of the common stock within eighteen months you would just let the bond mature. In this worst case you would have received \$75 in interest and, at maturity, a \$120 long term capital gain profit (1000 received minus 880 paid). A \$120 long term gain will yield a net of at least \$96 after taxes (if in 50 percent bracket) which would be the same as making \$192 ordinary income from a T-Bill or CD. This, plus the \$75 interest received, equals an investment which would have returned the same after taxes as a CD paying 20.2 percent, of which there was no such animal...and this was worst case! As it turned out, the common stock went up to over \$50 at which time the bond was worth 28.8×50 or \$1,440 in common stock. (See Figure 1.)

Figure 1



SoftTakes

SPYDER



"This is the biggest, baddest, most awesome number-cruncher yet. We call it 'Sweet Baby-Poo.'"

Financial Operating System, *continued*

It's true that, in this case, buying the common stock would have been more profitable as it increased 92 percent, while the convertible bond went up only 63 percent...but...my stock selections don't always go up (how sad)...so one must look at the risk side of the equation. What if the stock price was \$13 today. The guy who bought the common at 26 would be biting his nails while you, the wise one who bought the convertible bond, would be waiting patiently for your 20 percent CD (the bond) to mature in October. Had a brokerage firm advised clients to buy this bond they would never have been able to fill the orders...because...only a few more than 4,000 of these bonds were ever issued. On any market day, perhaps ten to 50 of them were for sale...most were held by professionals who saw no reason to sell. Getting clients excited about something if they can't get it at a favorable price is pointless and bad PR. Furthermore, the commissions on common stocks are from two to six times what they are on bonds. Unavailable in quantity....not a high profit item (for the broker)...neglected...save for a few professionals.

Why Convertible Securities?

Investors frequently ask, "Why do companies issue convertible securities? If they need to borrow money, why not just issue regular bonds?" Another example is in order: The Board of Directors of the XYZ Company decides that the Company should borrow \$5 million to finance some new plant construction. They contact an underwriter (the investment firm that sells the bonds) and explain their need for long term financing. The underwriter determines (based on the company's credit rating) that

they will have to pay fifteen percent interest in order to attract investors. On \$5 million this means a debt service of \$850,000 per year ($\$5,000,000 \times .17$).

The underwriter proposes an alternative which will reduce the debt service by \$150,000 per year. The company can sell the bonds with a fourteen percent coupon if they will add something to sweeten the deal. The company owns one million shares of their common stock which they repurchased in the market. The current stock price is \$15 per share. The underwriter suggests that they make each bond convertible into 50 shares of common stock. So the deal comes to market as a 20 year thirteen percent bond which is convertible into 50 shares of the Company's common stock. The astute investors who buy the bonds have part of the best of both worlds. The conversion value of the bond at issue date is \$750 (50×15). The investor gives up two percent in current yield (fully taxable) for long term capital gain potential.

Suppose the Company does well and two years hence the common stock is selling for \$30 per share. The bond must be worth \$1,500. (50×30). Almost all bonds have a "Call" provision. This gives the company the right to "Call" (redeem) the bonds at a stipulated price, usually three to five percent over face value (\$1,000). If XYZ common rose to \$30 per share, the Board might consider "Calling" the bonds. In this case it would force conversion into the common stock because no one will let the bond go for the call price (\$1050.) if they can sell in the open market for \$1,500. By "Calling" the bonds, the Company does away with the \$750,000 debt service of the bonds. Should the price of XYZ go down to \$7.50 per share rather than up to \$30, the bond

price will fall only about ten percent because, unlike the common stock, it has a 'Floor' of what it's worth as an ordinary bond. Of course the bond can be sold at any time if the outlook for the company seems poor. All in all, convertibles offer companies and investors unique opportunities.

Over 700 convertibles are available. Less than five percent of them offer far superior risk/reward ratios vis-a-vis the common stock. Over 35 pieces of data must be analyzed to select the best ones. This data is unavailable to most computer owners. If you are interested in following some of the outstanding convertibles, send a SASE to Box 3332, Tequesta Fl. 33458 and I will see to it that you get a current printout which will include the risk/reward ratio...that is, if the common stock goes up or down 25 or 50 percent, the effect it would have on the convertible's price.

In summary: Before you give your broker an order for common stock, have him check to see if the company has any convertible bonds or preferred stock outstanding, and, if so, does the convertible have a superior risk/reward ratio to the common stock.

Now let's talk about your current portfolio — which has likely been neglected. In your business world you make objective, hard headed, decisions which are carefully thought out and monitored, yet in your investment world you behave very differently. You see, there are no good or bad companies, only good management or bad management. In most sectors if you show me a company that is doing poorly, I can show you a company (in the same business) that is prospering.

Investors seem quite willing to sell at a profit, but are reluctant to sell at a loss. In fact, most investors just neglect their responsibility of reviewing their investments. I frequently analyze portfolios for potential clients. It is quite an eye opener to see a printout of what is really happening. I use VisCalc® which is the best program I have ever seen and is a snap to use. For those of you who don't have VisCalc, I sat down for a few hours and wrote the program listed below. It is not extremely sophisticated, but helps you see things as they are in your portfolio.

Have some fun with the random portfolio generator I included in the program. Run the program with your own data to see how well you have done. I ran out of horizontal space or I would have included two more variables: how long you have owned a security, and the average yearly return. That should be easy to figure long hand. The program may expose some of the stocks you have held for ten years as rather poor investments, considering the dollars they sell for today will buy 30 percent of what the dollars you paid for them would buy!

The Financial Operating System BBS operates 24 hours and is free save the eighteen cents you pay Ma Bell during off hours. Call 305-744-0190.



APPLE®

```

SS SS SS SS SS SS SS SS SS SS SS
SS
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SS 'Financial Operating System' SS
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SS Translator: Rich Bouchard SS
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100 TAB = 1403:D$ = CHR$(4):HH =
    0:P = 64:A1 = 0:A2 = 50:QU$ =
    CHR$(34)
110 DEF FN R(X) = INT ( RND (1
    ) * X) + 1
120 DEF FN T(X) = INT (X * 10 +
    .5) / 10
130 PRINT CHR$(21);: HOME : PRINT
    "DO YOU HAVE AN 80 COLUMN CA
    RD?": PRINT "AND DESIRE AN 80
    COLUMN DISPLAY? ";
140 GOSUB 820: IF I$ = "Y" THEN
    W = 80: PRINT : PRINT D$;"PR
    # 3":W1 = 43: GOTO 170
150 IF I$ < > "N" THEN 140
160 W = 40:W1 = 27
170 HOME : PRINT : PRINT "PORTFO
    LIO ANALYSIS BY J. MAYNARD K
    EYNES": PRINT : PRINT
180 M2$ = "SECURITY NAME  SHARES
    COST      CURRENT      P/L
    DIV.      % RETURN": IF W
    = 80 THEN M1$ = M2$
190 IF W = 40 THEN M1$ = "NAME S
    HARES COST CURR      P/L DIV
    % RET"
200 DIM A$(A2),A(A2),B(A2),C(A2)
    ,D(A2),E(A2),F(A2)
210 PRINT "FROM DISK=1  CREATE N
    EW PORTFOLIO=2  ";
220 GOSUB 820: IF I$ = "2" THEN
    HH = 1: GOTO 330
230 IF I$ < > "1" THEN 220
240 PRINT : PRINT
250 O = 2:A1 = 0: INPUT "WHICH FI
    LE DO YOU WANT? ";F$
260 INPUT "FROM WHICH DRIVE? ";D
    R$
270 ONERR GOTO 750
280 PRINT : PRINT D$;"OPEN ";F$;
    ",D";DR$: PRINT D$;"READ ";F
    $: POKE 216,0

```

```

290 IF O = 1 THEN 250
300 INPUT A1
310 FOR I = 1 TO A1: INPUT A$(I)
    ,A(I),B(I),C(I),D(I): GOSUB
    890: NEXT I
320 PRINT D$;"CLOSE ";F$: GOTO 5
    70
330 HOME
340 IF A1 = A2 THEN PRINT "NO R
    OOM FOR MORE ENTRIES. HIT "
    ;QU$;"RETURN";QU$;" ";: GOSUB
    870: GOTO 570
350 A1 = A1 + 1
360 PRINT "FOR A RANDOM PORTFOLI
    O JUST HIT ";: IF W = 40 THEN
    PRINT
370 PRINT QU$;"RETURN";QU$;" AT
    EACH QUERY.": PRINT
380 PRINT "SECURITY #";A1: PRINT
    : IF W = 80 THEN PRINT "NAM
    E OR ";
390 INPUT "STOCK SYMBOL? ";A$(A1
    )
400 IF W = 40 AND LEN (A$(A1)) >
    5 THEN PRINT "SYMBOL MUST B
    E 5 CHARACTERS OR LESS.": PRINT
    : GOTO 390
410 IF A$(A1) = "" THEN GOSUB 7
    90
420 INPUT "NUMBER OF SHARES OWNE
    D? ";X$:A(A1) = VAL (X$)
430 IF A(A1) < 1 THEN A(A1) = FN
    R(500)
440 PRINT "PRICE PAID PER SHARE"
    ;: IF W = 80 THEN PRINT " (
    36 3/8 = 36.375)";
450 INPUT X$:B(A1) = VAL (X$)
460 IF B(A1) = 0 THEN B(A1) = FN
    R(50)
470 INPUT "CURRENT VALUE PER SHA
    RE? ";X$:C(A1) = VAL (X$)
480 IF C(A1) = 0 THEN C(A1) = FN
    R(50)
490 PRINT "CURRENT YEARLY DIVIDE
    ND";: IF W = 80 THEN PRINT
    " (80 CENTS = .80)";
500 INPUT X$:D(A1) = VAL (X$)
510 IF D(A1) = 0 THEN D(A1) = INT
    ( FN R(300)) / 100
520 IF D(A1) > C(A1) THEN D(A1) =
    D(A1) / 10
530 I = A1: GOSUB 890
540 PRINT : PRINT "DO YOU WISH T
    O ENTER ANOTHER ENTRY? ";: IF
    W = 80 THEN PRINT "(Y/N) ";
550 GOSUB 820: IF I$ = "Y" OR I$
    = CHR$(13) THEN 330

```

```

560 IF I$ < > "N" THEN 550
570 LP = 0: GOSUB 1080
580 HH = 0: PRINT : PRINT : PRINT
    "A=ADD DATA D=REDISPLAY P=
    PRINT ";: IF W = 40 THEN PRINT
590 PRINT "S=SAVE      Q=QUIT  "
    ;
600 GOSUB 820: IF I$ = "A" THEN
    P = 64:U = 0: GOTO 330
610 IF I$ = "D" THEN P = 64:U =
    0: GOTO 570
620 IF I$ = "P" THEN 710
630 IF I$ = "Q" THEN 1420
640 IF I$ < > "S" THEN 600
650 PRINT : PRINT :O = 0: INPUT
    "NAME OF FILE FOR SAVE? ";F$
660 INPUT "DRIVE TO SAVE TO? ";D
    R$
670 ONERR GOTO 750
680 PRINT : PRINT D$;"OPEN ";F$;
    ",D";DR$: PRINT D$;"WRITE ";
    F$: POKE 216,0
690 IF O = 1 THEN 650
700 PRINT A1: FOR I = 1 TO A1: PRINT
    QU$;A$(I);QU$;" ";A(I);";";B
    (I);";";C(I);";";D(I): NEXT
    I: PRINT D$;"CLOSE ";F$: GOTO
    580
710 PRINT : PRINT : PRINT "HIT "
    ;QU$;"RETURN";QU$;" WHEN PRI
    NTER IS READY ";: GOSUB 870
720 PRINT CHR$(21);: PRINT D$;
    "PR# 1": PRINT CHR$(9);"80
    N": FOR I = 1 TO 80: PRINT "
    $";: NEXT I
730 LP = 1: GOSUB 1080
740 GOTO 580
750 PRINT "ERROR! WRONG FILENAM
    E OR DRIVE NUMBER": PRINT
760 CALL - 3288: IF O = 0 THEN
    O = 1: GOTO 690
770 O = 1: GOTO 290
780 DATA LOP TOP COMP.,LTC,BLUE
    MICRO,BLM,SAFETY NETS INC,S
    AN,DOS MINUS,DOM,SOFT TOUCH,
    SOT,SCHMALTZ,SCH,GOSUB INC,G
    OS,GOTO #%#,GOT,KEYNES INC.
    ,KEY,CANDY APPLE,CAA,SUPPLY
    SIDE LTD,SSL,SHELTERED IND.,
    SHI,END,END
790 READ H$,H1$: IF H$ = "END" THEN
    RESTORE : GOTO 790
800 IF W = 80 THEN A$(A1) = H$: RETURN
810 A$(A1) = H1$: RETURN

```


Financial Operating System, continued

```

820 GET I$
830 IF I$ = CHR$(3) THEN 1420
840 IF I$ > = CHR$(97) AND I$
    < = CHR$(122) THEN I$ =
    CHR$(ASC(I$) - 32)
850 IF I$ > " " THEN PRINT I$; CHR$(
    8);
860 RETURN
870 GOSUB 820: IF I$ < > CHR$(
    13) THEN 870
880 RETURN
890 E(I) = (A(I) * C(I)) - (A(I) *
    B(I))
900 J1 = J1 + E(I)
910 F(I) = D(I) / C(I) * 100
920 G1 = G1 + (C(I) * A(I))
930 H1 = H1 + (D(I) * A(I))
940 I1 = H1 / G1 * 100
950 RETURN
960 X = INT (X * 100 + .5) / 100
    :X1 = INT ((X - INT (X)) *
    100 + .05)
970 X$ = STR$(INT (ABS (X))) +
    "."
980 SP$ = " ": IF LEN (X$) < NW +
    1 THEN SP$ = LEFT$ ("
    ",NW - LEN (X$) + 1)
990 IF X > = 0 THEN 1020
1000 IF SP$ = " " OR SP$ = " " THEN
    SP$ = "-": GOTO 1020
1010 SP$ = LEFT$ (SP$, LEN (SP$)
    - 1) + "-"
1020 IF X1 = 0 THEN X$ = X$ + "0
    0": RETURN
1030 IF X1 < 10 THEN X$ = X$ + "
    0"
1040 X$ = X$ + STR$(X1): RETURN
1050 GOSUB 960:X$ = SP$ + X$: RETURN
1060 GOSUB 960: IF SP$ < > " " THEN
    X$ = SP$ + "$" + X$: RETURN
1070 GOSUB 960:X$ = SP$ + LEFT$(
    (X$, LEN (X$) - 1)): RETURN
1080 HOME
1090 W2 = W1: IF LP THEN W2 = 43
1100 IF LP = 0 THEN PRINT M1$: GOTO
    1120
1110 PRINT M2$
1120 FOR I = 1 TO A1: IF LP = 0 THEN
    VTAB U + 3
1130 IF (W = 40) AND LP = 0 THEN
    1210
1140 PRINT LEFT$(A$(I),15); POKE
    TAB,17: POKE 36,17: PRINT A(
    I);

```

```

1150 X = B(I):NW = 3: GOSUB 1060:
    POKE TAB,23: POKE 36,23: PRINT
    X$;
1160 X = C(I):NW = 3: GOSUB 1060:
    POKE TAB,32: POKE 36,32: PRINT
    X$;
1170 X = E(I):NW = 7: GOSUB 1060:
    POKE TAB,41: POKE 36,41: PRINT
    X$;
1180 X = D(I):NW = 2: GOSUB 1060:
    POKE TAB,54: POKE 36,54: PRINT
    X$;
1190 X = F(I):NW = 3: GOSUB 1050:
    POKE TAB,63: POKE 36,63: PRINT
    X$
1200 GOTO 1270
1210 PRINT LEFT$(A$(I),5); TAB(
    8);A(I);
1220 X = FN T(B(I)):NW = 2: GOSUB
    1070: PRINT TAB(13);X$;
1230 X = FN T(C(I)):NW = 2: GOSUB
    1070: PRINT TAB(18);X$;
1240 X = FN T(E(I)):NW = 7: GOSUB
    1070: PRINT TAB(21);X$;
1250 X = FN T(D(I)):NW = 1: GOSUB
    1070: PRINT TAB(32);X$;
1260 X = FN T(F(I)):NW = 2: GOSUB
    1050: PRINT TAB(36); LEFT$(
    (X$, LEN (X$) - 1)
1270 IF LP = 0 THEN U = U + 1: IF
    U = 18 THEN PRINT : PRINT "
    PRESS ";QU$;"RETURN";QU$;" F
    OR NEXT PAGE ";: GOSUB 870:U
    = 0: HOME : PRINT M1$
1280 NEXT I
1290 IF LP = 0 THEN PRINT : PRINT
    "PRESS ";QU$;"RETURN";QU$;"
    FOR A RECAP OF TOTALS ";: GOSUB
    870: HOME
1300 PRINT " ": PRINT " ": PRINT
    " "
1310 NW = 6: IF (W = 80) OR LP THEN
    NW = 8
1320 PRINT "PORTFOLIO VALUE:";X
    = G1: GOSUB 1060: POKE TAB,
    W2: POKE 36,W2: PRINT X$
1330 PRINT "TOTAL YEARLY RETURN:
    ";X = H1: GOSUB 1060: POKE
    TAB,W2: POKE 36,W2: PRINT X$
1340 IF (W = 80) OR LP THEN PRINT
    "PERCENTAGE ";
1350 PRINT "RETURN ON CURRENT VA
    LUE:";X = I1: GOSUB 1050: POKE
    TAB,W2 + 1: POKE 36,W2 + 1: PRINT
    X$;"%"

```

```

1360 IF (W = 80) OR LP THEN PRINT
    "PORTFOLIO HAS A ";
1370 PRINT "CUMULATIVE ";: IF J1
    < 0 THEN PRINT "LOSS";: GOTO
    1390
1380 PRINT "PROFIT";
1390 PRINT " OF: ";X = ABS (J1
    ): GOSUB 1060: POKE TAB,W2: POKE
    36,W2: PRINT X$
1400 IF LP = 1 THEN PRINT D$;"P
    R# 0": IF W = 80 THEN PRINT
    D$;"PR# 3"
1410 RETURN
1420 PRINT : PRINT : END

```



**SWAT
TABLE**
For **APPLE®**
FINANCIAL OPERATING SYSTEM

LINES	SWAT CODE	LENGTH
100 - 200	LZ	520
210 - 320	GK	327
330 - 440	DL	479
450 - 560	XB	391
570 - 680	GF	346
690 - 780	XM	540
790 - 900	CK	241
910 - 1020	UH	309
1030 - 1140	GT	267
1150 - 1260	RZ	435
1270 - 1370	ZH	503
1380 - 1420	PT	118



```

SS SS SS SS SS SS SS SS SS SS SS SS
SS
SS Atari BASIC SS
SS 'Financial Operating System' SS
SS Author: J. Maynard Keynes SS
SS Translator: Rich Bouchard SS
SS Copyright (c) 1983 SS
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SS
SS SS SS SS SS SS SS SS SS SS SS SS
20 DIM QU$(1),I$(1),M1$(40),F$(8),D$(1
),FSPEC$(16),RET$(6),SPACES$(38),LINE$(
40),Z$(20),X$(20),SP$(10)
22 SPACES$=" ":SPACES$(38,38)=" ":SPAC
ES$(2)=SPACES$(1)
30 OPEN #2,4,0,"K: "
80 RET$="RETURN"

```



```

90 HH=0:A1=0:A2=50:QU#=CHR$(34):TAB=85
:SZ=5:CURLSOR=752:OFF=1:CON=0:W1=26:CAN
CEL=33333:KBD=764
130 GRAPHICS 0:PRINT :PRINT "Portfolio
Analysis by:":POKE TAB,20:PRINT "J. M
aynard Keynes"
150 M1$="NAME SHRS COST CURR P/L
DIV % RET"
170 DIM A$(A2*SZ),A(A2),B(A2),C(A2),D(
A2),E(A2),F(A2)
172 A$=" ":A$(A2*SZ)=" ":A$(2)=A$(1)
180 PRINT :PRINT :PRINT "FROM DISK OR
CREATE NEW PORTFOLIO ";
190 GOSUB 680:IF I$="C" THEN HH=1:GOTO
270
192 IF I$("<"D" THEN 190
200 ? :?
210 Q=2:A1=0:PRINT "WHICH FILE DO YOU
WANT";:INPUT F$
220 PRINT "FROM WHICH DRIVE";:INPUT D$
230 FSPEC$="D1":FSPEC$(2,2)=D$:FSPEC$
(4)=F$
231 PRINT :TRAP 630:OPEN #1,4,0,FSPEC$
:TRAP CANCEL
240 IF Q=1 THEN 210
245 INPUT #1,A1:INPUT #1,A$
250 FOR I=1 TO A1:INPUT #1,Z:A(I)=Z:IN
PUT #1,Z:B(I)=Z:INPUT #1,Z:C(I)=Z:INPU
T #1,Z:D(I)=Z:GOSUB 740:NEXT I
260 CLOSE #1:GOTO 490
270 GRAPHICS 0
280 IF A1=A2 THEN PRINT "No room for m
ore entries. Hit ";RET$;:GOSUB 730:GOT
O 490
290 A1=A1+1
300 PRINT "FOR A RANDOM PORTFOLIO JUST
HIT":PRINT RET$;" AT EACH QUERY.":PRI
NT
320 PRINT "SECURITY #";A1:PRINT
330 PRINT "STOCK SYMBOL ";:INPUT Z$
340 IF Z$="" THEN GOSUB 660:GOTO 360
350 A$(A1*SZ-4,A1*SZ)=Z$
360 PRINT "NUMBER OF SHARES OWNED ";:G
OSUB 2000:A(A1)=Z
370 IF Z<1 THEN A(A1)=INT(RND(0)*500)+
1
380 PRINT "PRICE PAID PER SHARE ";:GOS
UB 2000:B(A1)=Z
400 IF Z=0 THEN B(A1)=INT(RND(0)*50)+1
410 PRINT "CURRENT VALUE PER SHARE ";:
GOSUB 2000:C(A1)=Z
420 IF Z=0 THEN C(A1)=INT(RND(0)*50)+1
430 PRINT "CURRENT YEARLY DIVIDEND ";:
GOSUB 2000:D(A1)=Z
450 IF Z=0 THEN D(A1)=INT(RND(0)*30+1)
/10

```

```

452 IF D(A1)>C(A1) THEN D(A1)=D(A1)/1
0
460 I=A1:GOSUB 740
470 PRINT :PRINT "DO YOU WISH TO ENTER
ANOTHER ENTRY? ";
480 GOSUB 680:IF I$="Y" OR I$=CHR$(27)
THEN 270
482 IF I$("<"N" THEN 480
490 LP=0:GOSUB 880
500 HH=0:PRINT :PRINT "A=ADD DA
TA D=REDISPLAY P=PRINT":PRINT "S=SAV
E Q=QUIT ";
520 GOSUB 680:IF I$="A" THEN U=0:GOTO
270
522 IF I$="D" THEN U=0:GOTO 490
524 IF I$="P" THEN 590
526 IF I$="Q" THEN 2050
528 IF I$("<"S" THEN 520
530 PRINT :PRINT :Q=0:PRINT "NAME OF F
ILE FOR SAVE";:INPUT F$
540 PRINT "DRIVE TO SAVE TO";:INPUT D$
550 FSPEC$="D1":FSPEC$(2,2)=D$:FSPEC$
(4)=F$
551 PRINT :TRAP 630:OPEN #1,8,0,FSPEC$
560 IF Q=1 THEN 530
580 PRINT #1,A1:PRINT #1,A$:FOR I=1 TO
A1:PRINT #1,A(I):PRINT #1,B(I):PRINT
#1,C(I):PRINT #1,D(I):NEXT I
581 FOR I=1 TO A1:PRINT #1,A(I):PRINT
#1,B(I):PRINT #1,C(I):PRINT #1,D(I):NE
XT I
582 CLOSE #1:GOTO 500
590 PRINT :PRINT :PRINT RET$;" WHEN PR
INTER IS READY ";:GOSUB 730
610 LP=1:GOSUB 880
620 GOTO 500
630 PRINT CHR$(253);"ERROR! WRONG FIL
ENAME OR DRIVE NUMBER"
632 TRAP CANCEL
642 IF Q=0 THEN Q=1:GOTO 560
644 Q=1:GOTO 240
650 DATA LTC,BLM,SAN,DOM,SOT,SCH,GOS,G
OT,KEY,CAA,SSL,SHI,END
660 READ Z$:IF Z$="END" THEN RESTORE :
GOTO 660
670 A$(A1*SZ-4,A1*SZ)=Z$:RETURN
680 POKE KBD,255:POKE CURSOR,OFF
682 ? CHR$(160);CHR$(30);:FOR T=1 TO 5
:IF PEEK(KBD)<>255 THEN 690
684 NEXT T:PRINT " ";CHR$(30);:FOR T=1
TO 5:IF PEEK(KBD)=255 THEN NEXT T:GOT
O 682
690 GET #2,CHAR
691 IF CHAR>=128 THEN CHAR=CHAR-128
692 IF CHAR<97 OR CHAR>122 THEN I$=CHR
$(CHAR):GOTO 696
694 I$=CHR$(CHAR-32)

```

```

696 IF CHAR>=32 THEN PRINT CHR$(CHAR+1
28);CHR$(30);
698 POKE CURSOR,CON:RETURN
730 GOSUB 680:IF I$("<"CHR$(27) THEN 730
732 RETURN
740 E(I)=(A(I)*C(I))-(A(I)*B(I))
750 J1=J1+E(I)
760 F(I)=D(I)/C(I)*100
770 G1=G1+(C(I)*A(I))
780 H1=H1+(D(I)*A(I))
790 I1=H1/G1*100
800 RETURN
810 X=INT(X*100+0.5)/100:X1=INT((X-INT
(X))*100)
820 X$=STR$(INT(ABS(X))):X$(LEN(X$)+1)
="."
822 SP$="":IF LEN(X$)<NW+1 THEN SP$=SP
ACES$(1,NW-LEN(X$)+1)
824 IF X>=0 THEN 830
826 IF SP$="" THEN SP$="--":GOTO 830
828 SP$(LEN(SP$))="--"
830 IF X1=0 THEN X$(LEN(X$)+1)="00":RE
TURN
840 IF X1<10 THEN X$(LEN(X$)+1)="0"
850 X$(LEN(X$)+1)=STR$(X1):RETURN
860 GOSUB 810:Z$=SP$:Z$(LEN(Z$)+1)=X$:
Z=LEN(Z$):RETURN
870 GOSUB 810:Z$=SP$:Z$(LEN(Z$)+1)="$"
:Z$(LEN(Z$)+1)=X$:Z=LEN(Z$):RETURN
872 GOSUB 810:Z$=SP$:Z$(LEN(Z$)+1)=X$(
1,LEN(X$)-1):Z=LEN(Z$):RETURN
880 IF LP=1 THEN OPEN #1,8,0,"P":GOTO
890
881 OPEN #1,8,0,"E":GRAPHICS 0
890 PRINT #1;M1$:IF LP=1 THEN PRINT #1
;" "
900 FOR I=1 TO A1
960 LINE$=SPACES$:LINE$(1,SZ)=A$(I*SZ-
4,I*SZ):LINE$(7,6+LEN(STR$(A(I))))=STR
$(A(I))
961 X=B(I):NW=2:GOSUB 872:LINE$(11,10+
Z)=Z$
962 X=C(I):NW=2:GOSUB 872:LINE$(16,15+
Z)=Z$
963 X=E(I):NW=7:GOSUB 872:LINE$(20,19+
Z)=Z$
964 X=D(I):NW=1:GOSUB 872:LINE$(30,29+
Z)=Z$
966 X=F(I):NW=2:GOSUB 860:LINE$(34,33+
Z)=Z$
967 IF LP=1 THEN PRINT #1;LINE$:GOTO 9
71
968 PRINT #1;LINE$:U=U+1
969 IF U=18 THEN PRINT :PRINT "PRESS "
;RET$;" FOR NEXT PAGE ";:GOSUB 730:U=0
:GRAPHICS 0:POKE CURSOR,OFF:PRINT M1$
971 NEXT I

```




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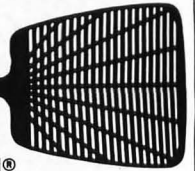
Financial Operating System, continued

```

972 IF LP=0 THEN PRINT :PRINT "PRESS "
;RET$;" FOR A RECAP OF TOTALS ";GOSUB
730:GRAPHICS 0:POKE CURSOR,OFF
973 PRINT #1;" ":PRINT #1;" ":PRINT #1
;" "
974 NW=6
977 LINE$=SPACES$:LINE$(1,16)="PORTFOL
IO VALUE:";X=61:GOSUB 870:LINE$(W1)=Z$
:PRINT #1;LINE$
979 LINE$=SPACES$:LINE$(1,20)="TOTAL Y
EARLY RETURN:";X=H1:GOSUB 870:LINE$(W1
)=Z$:PRINT #1;LINE$
990 LINE$=SPACES$:LINE$(1,24)="RETURN
ON CURRENT VALUE:";X=J1:GOSUB 860:LINE
$(W1+1)=Z$:PRINT #1;LINE$;"%"
1010 LINE$=SPACES$:LINE$(1,10)="CUMULA
TIVE":IF J1<0 THEN LINE$(12,15)="LOSS"
:GOTO 1020
1012 LINE$(12,17)="PROFIT"
1020 LINE$(19,21)="OF:";X=ABS(J1):GOSU
B 870:LINE$(W1)=Z$:PRINT #1;LINE$
1030 CLOSE #1
1040 RETURN
2000 TRAP 2020:INPUT Z$:Z=VAL(Z$):RETU
RN
2020 Z=0:TRAP CANCEL:RETURN
2050 PRINT :PRINT :END

```

SWAT TABLE



For ATARI®

FINANCIAL OPERATING SYSTEM

LINES	SWAT CODE	LENGTH
20 - 150	DT	523
170 - 245	NR	450
250 - 370	UM	512
380 - 490	DI	505
500 - 580	AP	527
581 - 670	PL	439
680 - 740	ET	405
750 - 828	QX	334
830 - 960	PE	549
961 - 972	CJ	547
973 - 1020	LV	545
1030 - 2050	WV	83

IBM® PC

```

SS SS SS SS SS SS SS SS SS SS SS SS
SS
SS      FC Advanced BASIC      SS
SS 'Financial Operating System' SS
SS  Author: J. Maynard Keynes  SS
SS  Translator: Rich Bouchard  SS
SS      Copyright (c) 1983      SS
SS  SoftSide Publications, Inc  SS
SS
SS SS SS SS SS SS SS SS SS SS SS SS
100 DEF FNR(X)=INT(RND(1)*X)+1
110 CLS:WIDTH 40:PRINT "Do you want an 8
0 column display? ";
120 GOSUB 680:IF I$="Y" THEN W=80:W1=47
ELSE IF I$="N" THEN W=40:W1=27 ELSE 120
130 CLS:WIDTH W:PRINT:PRINT"Portfolio An
alysis by J. Maynard Keynes":PRINT:PRINT
140 HH=0:P=64:A1=0:A2=50:QU$=CHR$(34)
150 M2$="SECURITY NAME  SHARES  COST
CURRENT      P/L      DIV.      % RETU
RN":F2$="\          \ ##### $$$###
#####.### $#####.## $$$### ###.#
#_%":IF W=80 THEN M1$=M2$:F1$=F2$

```

```

160 IF W=40 THEN M1$="NAME SHRS COST C
URR      P/L      DIV %RET":F1$="\ \ #### #
#.## ##.## #####.## ##.## ##.#"
170 DIM A$(A2),A(A2),B(A2),C(A2),D(A2),E
(A2),F(A2)
180 PRINT"From disk=1 Create new portfo
lio=2 ";
190 GOSUB 680:IF I$="2" THEN HH=1:GOTO 2
70 ELSE IF I$<"1" THEN 190
200 PRINT:PRINT
210 O=0:A1=0:LINE INPUT"Which file do yo
u want? ";F$
220 LINE INPUT"From which drive? ";D$
230 ON ERROR GOTO 630:OPEN"I",1,D$+"":*F
$:ON ERROR GOTO 0
240 IF O=1 THEN 210
250 INPUT #1,A1:FOR I=1 TO A1:INPUT #1,A
$(I),A(I),B(I),C(I),D(I):GOSUB 750:NEXT
I
260 CLOSE:GOTO 500
270 CLS
280 IF A1=A2 THEN PRINT"No room for more
entries. Hit ";QU$;"RETURN";QU$;GOSUB
740:GOTO 500
290 A1=A1+1

```

```

300 PRINT"For a random portfolio just hi
t ";:IF W=40 THEN PRINT
310 PRINT QU$;"RETURN";QU$;" at each que
ry.":PRINT
320 PRINT"Security #";A1:PRINT:IF W=80 T
HEN PRINT "Name or ";
330 LINE INPUT"Stock symbol? ";A$(A1)
340 IF W=40 AND LEN(A$(A1))>4 THEN PRINT
"Symbol must be 4 characters or less.":
PRINT:GOTO 330
350 IF A$(A1)="" THEN GOSUB 660
360 INPUT"Number of shares owned";A(A1)
370 IF A(A1)<1 THEN A(A1)=FNR(500)
380 PRINT "Price paid per share";:IF W=8
0 THEN PRINT " (36 3/8 = 36.375)";
390 INPUT B(A1)
400 IF B(A1)=0 THEN B(A1)=FNR(50)+FNR(4)
/4
410 INPUT"Current value per share";C(A1)
420 IF C(A1)=0 THEN C(A1)=FNR(50)+FNR(4)
/4
430 PRINT "Current yearly dividend";:IF
W=80 THEN PRINT " (80 cents = .80)";
440 INPUT D(A1)

```



```

450 IF D(A1)=0 THEN D(A1)=INT(FNR(300))/
100
460 IF D(A1)>C(A1) THEN D(A1)=D(A1)/10
470 I=A1:GOSUB 750
480 PRINT:PRINT"Do you wish to enter ano
ther entry? ";IF W=80 THEN PRINT"(Y/N)
";
490 GOSUB 680:IF I#="Y" OR I#=CHR$(13) T
HEN 270 ELSE IF I#<>"N" THEN 490
500 LP=0:GOSUB 880
510 HH=0:PRINT:PRINT:PRINT"A=Add data D
=Redisplay P=Print ";IF W=40 THEN PRI
NT
520 PRINT"S=Save      Q=Quit  ";
530 GOSUB 680:IF I#="A" THEN P=64:U=0:GO
TO 270 ELSE IF I#="D" THEN P=64:U=0:GOTO
500 ELSE IF I#="P" THEN 590 ELSE IF I#="
"Q" THEN 1070 ELSE IF I#<>"S" THEN 530
540 PRINT:PRINT:D=0:LINE INPUT"Name of f
ile for save? ";F$
550 LINE INPUT"Drive to save to? ";D$
560 ON ERROR GOTO 630:OPEN"D",1,D#+":"*F
$:ON ERROR GOTO 0
570 IF D=1 THEN 540
580 WRITE #1,A1:FOR I=1 TO A1:WRITE #1,A
$(I);A(I);B(I);C(I);D(I):NEXT I:CLOSE:GO
TO 510
590 PRINT:PRINT:PRINT"Hit ";QU$;"RETURN"
;OU$;" when printer is ready ";GOSUB 74
0
600 LPRINT STRING$(LEN(M2$),"$"):LPRINT
"
610 LP=1:GOSUB 880
620 GOTO 510
630 CLOSE:PRINT:D=1
640 PRINT"Error! Wrong filename or driv
e number":PRINT:RESUME NEXT
650 DATA LOP TOP COMP.,LTC,BLUE MICRO,BL
M,SAFETY NETS INC,SAN,DQS MINUIS,DOM,SOFT
TOUCH,SOT,SCHMALTZ,SCH,GOSUB INC,GOS,GO
TO $%$,GOT,KEYNES INC.,KEY,CANDY APPLE,
CAA,SUPPLY SIDE LTD,SSL,SHELTERED IND.,E
HI,END,END
660 READ H$,H1$:IF H#="END" THEN RESTORE
:GOTO 660 ELSE IF W=80 THEN A$(A1)=H$ EL
SE A$(A1)=H1$
670 RETURN
680 LOCATE ,,0
690 PRINT CHR$(22);CHR$(29);:FOR T=1 TO
30:I$=INKEY$:IF I$=" " THEN NEXT T:PRINT"
";CHR$(29);:FOR T=1 TO 30:I$=INKEY$:IF
I$=" " THEN NEXT T:GOTO 680
700 IF I#=CHR$(13) THEN BEEP:GOTO 1070
710 IF I#>="a" AND I#<="z" THEN I#=CHR$(
ASC(I$)-32)
720 IF I#> " " THEN COLOR 0,7:PRINT I$;CH
R$(29);:COLOR 7,0 ELSE PRINT" "; CHR$(29
);

```

```

730 RETURN
740 GOSUB 680:IF I#<>CHR$(13) THEN 740 E
LSE RETURN
750 E(I)=(A(I)*C(I))-(A(I)*B(I))
760 J1=J1+E(I)
770 F(I)=0(I)/C(I)*100
780 B1=B1+(C(I)*A(I))
790 H1=H1+(D(I)*A(I))
800 I1=H1/G1*100
810 RETURN
820 X1=INT((X-INT(X))*100)
830 X$=STR$(INT(X))+","
840 IF X1=0 THEN X$=X$+"00":RETURN
850 IF X1<10 THEN X$=X$+"0"
860 X$=X$+MID$(STR$(X1),2):RETURN
870 GOSUB 820:X$=LEFT$(X$,1)+"$"+MID$(X$
,2):RETURN
880 W2=W1:IF LP THEN W2=47
890 IF LP=0 THEN OPEN "SCRN:" FOR OUTPUT
AS 1:CLS ELSE OPEN "LPT1:" FOR OUTPUT A
S 1
900 IF LP=1 THEN PRINT #1,M2$ ELSE PRINT
#1,M1$
910 PRINT #1," "
920 FOR I=1 TO A1:IF LP=0 THEN LOCATE U+
3,1
930 IF LP=1 THEN PRINT #1,USING F2$;A$(I
);A(I);B(I);C(I);E(I);D(I);F(I):ELSE PRI
NT #1,USING F1$;A$(I);A(I);B(I);C(I);E(I
);D(I);F(I)
940 IF LP=0 THEN U=U+1:IF U=18 THEN PRIN
T:PRINT"Press ";QU$;"RETURN";OU$;" for n
ext page ";GOSUB 740:U=0:CLS:PRINT M1$
950 NEXT 1
960 IF LP=0 THEN PRINT:PRINT"Press ";QU$
;"RETURN";OU$;" for a recap of totals ";
:GOSUB 740:CLS
970 PRINT #1," ":PRINT #1," ":PRINT #1,"
"
980 PRINT #1,"Portfolio value:":X=61:GO
SUB 870:PRINT #1,TAB(W2);X$
990 PRINT #1,"Total yearly return:":X=H
1:GOSUB 870:PRINT #1,TAB(W2);X$
1000 IF (W=80) OR LP THEN PRINT #1,"Perc
entage r"; ELSE PRINT #1,"R";
1010 PRINT #1,"eturn on current value:":
X=I1:GOSUB 820:PRINT #1,TAB(W2+1);X$;%
"
1020 IF (W=80) OR LP THEN PRINT #1,"Tota
l portfolio has a c"; ELSE PRINT #1,"C";
1030 PRINT #1,"umulative ";:IF J1<0 THEN
PRINT #1,"loss"; ELSE PRINT #1,"profit"
;
1040 PRINT #1," of ";:X=J1:GOSUB 870:P
RINT #1,TAB(W2);X$
1050 CLOSE #1
1060 RETURN

```

1070 PRINT:PRINT:END



For IBM® PC
FINANCIAL OPERATING SYSTEM

LINES	SWAT CODE	LENGTH
100 - 160	IH	533
170 - 280	SE	451
290 - 400	NK	463
410 - 520	WZ	467
530 - 640	SG	500
650 - 720	GG	520
730 - 840	TM	250
850 - 960	XF	543
970 - 1070	AN	458



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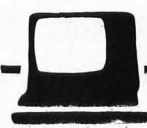


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SS 'Financial Operating System' SS
SS Author: J. Maynard Keynes SS
SS Copyright (c) 1983 SS
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```

```

100 CLS:PRINT:PRINT"PORTFOLIO ANALYSIS BY J. MAYNARD KEYNES":PRI
NT:PRINT
110 CLEAR:CLEAR5000
120 HH=0:A1=0:A2=50:F2$="#####.##":F3$="#####.##":DU$=CHR$
(34)
130 M1$="SECURITY NAME SHARES COST CURRENT P/L DIV
. % RET":F1$="% % #### $$.### $$.### $$$$$.##
$$.## ##.##%"
140 M2$="PORTFOLIO VALUE:"M3$="TOTAL YEARLY RETURN:"M4$="PERCE
NTAGE RETURN ON CURRENT VALUE:"M5$="TOTAL PORTFOLIO HAS A CUMUL
ATIVE "
150 DIMA$(A2),A(A2),B(A2),C(A2),D(A2),E(A2),F(A2)
160 PRINT"FROM DISK=1 CREATE NEW PORTFOLIO=2 FROM CASSETTE=3
";
170 GOSUB890:IF1$="1"THEN240ELSEIF1$="2"THENHH=1:GOTO310ELSEIF1$
<)*3"THEN170
180 CLS:PRINT@512,"PRESS ";QU$;"ENTER";QU$;" WHEN CASSETTE RECOR
DER IS READY ";GOSUB930:CLS:PRINT@512,"STANDBY, LOOKING FOR SYN
C BYTE."
190 INPUT#-1,A1,J$,J1,B1,H1,I1
200 CLS:PRINTA1;"ITEMS ARE BEING LOADED FROM CASSETTE"
210 FORI=1TOA1:INPUT#-1,A$(I),A(I),B(I),C(I),E(I),D(I),F(I)
220 PRINTA$(I),
230 NEXTI:GOTO490
240 PRINT:PRINT
250 Q=0:A1=0:INPUT"WHICH FILE DO YOU WANT";F$
260 INPUT"FROM WHICH DRIVE";D$
270 ONERRORGOTO850:OPEN"1",I,F#+":"+D$:ONERRORGOTO0
280 IFQ=1THEN250
290 IFNOTEOF(1)THENA1=A1+1:INPUT#1,A$(A1),A(A1),B(A1),C(A1),D(A1)
):GOSUB940:GOTO290
300 CLOSE:GOTO490
310 CLS
320 IFA1=A2THENPRINT"NO ROOM FOR MORE ENTRIES. HIT ";QU$;"ENTER
";QU$;GOSUB930:GOTO490
330 A1=A1+1
340 PRINT"FOR A RANDOM PORTFOLIO JUST HIT ";QU$;"ENTER";QU$;" AT
EACH QUERY.":PRINT
350 PRINT"SECURITY #":A1:INPUT"NAME OR STOCK SYMBOL";A$(A1)
360 IFA$(A1)=""THENGOSUB880
370 INPUT"NUMBER OF SHARES OWNED":A(A1)
380 IFA(A1)<1THENA(A1)=RND(500)
390 INPUT"PRICE PAID PER SHARE (36 3/8 = 36.375) ";B(A1)
400 IFB(A1)=0THENB(A1)=RND(50)+RND(8)/8
410 INPUT"CURRENT VALUE PER SHARE";C(A1)
420 IFC(A1)=0THENC(A1)=RND(50)+RND(8)/8
430 INPUT"CURRENT YEARLY DIVIDEND (80 CENTS = .80) ";D(A1)
440 IFD(A1)=0THEND(A1)=INT(RND(0)*300)/100
450 IFB(A1)>C(A1)THEND(A1)=D(A1)/10
460 GOSUB940
470 PRINT:PRINT"DO YOU WISH TO ENTER ANOTHER ENTRY? (Y/N) ";
480 GOSUB890:IF1$="N"THEN490ELSEIF1$="Y"ORI$=CHR$(13)THEN310ELSE
480

```

```

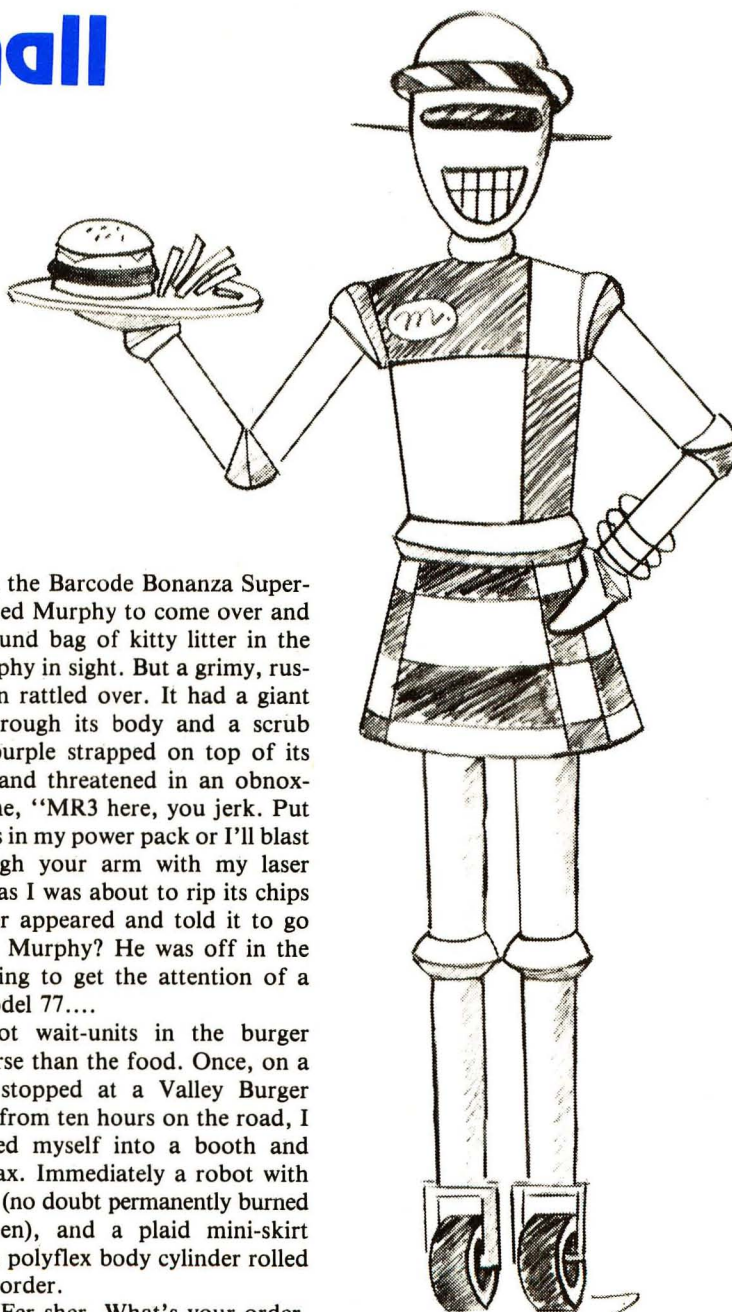
490 CLS:PRINTM1$:PRINT
500 FORI=1TOA1:PRINTUSINGF1$;A$(I);A(I);B(I);C(I);E(I);D(I);F(I)
510 U=U+1:IFU=12THENPRINT:PRINT"PRESS ";QU$;"ENTER";QU$;" FOR NE
XT PAGE ";GOSUB930:U=0:CLS:PRINTM1$:PRINT
520 NEXTI
530 PRINT:PRINT"PRESS ";QU$;"ENTER";QU$;" FOR A RECAP OF TOTALS
";GOSUB930:CLS:PRINT:PRINT:PRINT
540 PRINTM2$;:PRINTTAB(44);USINGF3$;G1
550 PRINTM3$;:PRINTTAB(44);USINGF3$;H1
560 PRINTM4$;:PRINTTAB(44);USINGF2$;I1
570 IFJ1<0THENJ$="LOSS"ELSEJ$="PROFIT"
580 PRINTM5$;J$;" OF:";TAB(44);USINGF3$;J1
590 HH=0:PRINT:PRINT"ADD MORE DATA D=REDISPLAY S=SAVE
OR PRINT Q=QUIT ";
600 GOSUB890:IF1$="A"THENU=0:GOTO310ELSEIF1$="D"THENU=0:GOTO490E
LSEIF1$="S"THEN610ELSEIF1$="Q"THEN1010ELSE600
610 CLS
620 PRINT"SAVE FILE TO: C=CASSETTE D=DISK P=PRINTER ";
630 GOSUB890
640 IF1$="P"THEN730ELSEIF1$="C"THEN710ELSEIF1$<)"D"THEN630
650 PRINT:PRINT:O=0:INPUT"NAME OF FILE TO BE SAVED TO DISK";F$
660 INPUT"TO WHICH DRIVE";D$
670 ONERRORGOTO850:OPEN"0",I,F#+":"+D$:ONERRORGOTO0
680 IFQ=1THEN650
690 CLS:PRINT@518,"SAVING TO DISK"
700 FORI=1TOA1:PRINT#1,A$(I);";";A(I);B(I);C(I);D(I);NEXT:CLOSE:
GOTO590
710 CLS:PRINTA1;"ITEMS ARE BEING SAVED TO CASSETTE":PRINT#-1,A1,
J$,J1,G1,H1,I1
720 FORI=1TOA1:PRINT#-1,A$(I),A(I),B(I),C(I),E(I),D(I),F(I):NEXT
:GOTO590
730 PRINT:PRINT:PRINT"HIT ";QU$;"ENTER";QU$;" WHEN PRINTER IS RE
ADY ";GOSUB930
740 LPRINTSTRING$(64,"$")
750 LPRINTM1$:LPRINT " "
760 FORI=1TOA1:LPRINTUSINGF1$;A$(I);A(I);B(I);C(I);E(I);D(I);F(I)
)
770 NEXTI
780 LPRINT" ":LPRINT " ":LPRINT " "
790 LPRINTM2$;:LPRINTTAB(44);USINGF3$;G1
800 LPRINTM3$;:LPRINTTAB(44);USINGF3$;H1
810 LPRINTM4$;:LPRINTTAB(44);USINGF2$;I1
820 IFJ1<0THENJ$="LOSS"ELSEJ$="PROFIT"
830 LPRINTM5$;J$;" OF:";TAB(44);USINGF3$;J1
840 GOTO590
850 CLOSE:PRINT:O=1
860 PRINT"ERROR! WRONG FILENAME OR DRIVE NUMBER":PRINT:RESUMENE
XT
870 DATA LOP TOP COMP.,BLUE MICRO,SAFETY NETS INC,DOS MINUS,SOFT
TOUCH,SCHMALTZ,GOSUB INC,GOTO $%$,KEYNES INC.,CANDY APPLE,SUPP
LY SIDE LTD,SHELTERED IND.,END
880 READH$:IFH$="END"THENRESTORE:GOTO880ELSEA$(A1)=H$:RETURN
890 PRINTCHR$(143);CHR$(24);:FORT=1TO5:I$=INKEY$:IF1$=""THENNEXT
I:PRINT " ";CHR$(24);:FORT=1TO5:I$=INKEY$:IF1$=""THENNEXTT:GOTO89
0
900 IF1$=CHR$(97)ANDI$<=CHR$(122)THENI$=CHR$(ASC(I$)-32)
910 IF1$>" "THENPRINTI$;CHR$(24);ELSEPRINT " ";CHR$(24);
920 RETURN
930 GOSUB890:IF1$<>CHR$(13)THEN930ELSERETURN
940 E(A1)=(A(A1)*C(A1))-(A(A1)*B(A1))
950 J1=J1+E(A1)
960 F(A1)=D(A1)/C(A1)*100
970 G1=G1+(C(A1)*A(A1))
980 H1=H1+(D(A1)*A(A1))

```

continued on page 34

Murphy and Me

by Steve Birchall



Those personal robots — nearly everyone owns one these days. But I had a personal robot a long time ago. Built it from Robot Shack kits. Modified it, rebuilt it, reprogrammed it until it fell apart. The day I got it to mow the lawn I thought I had accomplished something truly amazing. The neighbors never really trusted me after that. But now I have a new robot. Maybe I should say newer, because I've had Murphy for long enough to have modified him several times.

I just finished installing the new Butler cards last night. As always happens with anything the Murphy Robotics Corp. puts out, nothing went right. Somehow, the Butler PROMs accessed the Gardening RAMs, and you can guess the rest. At least now I can watch my reflection in impeccably polished shovels while Murphy shaves me in the morning. But serving wine to the zucchini.... Worse still, no one in Engineering at Murphy Robotics could tell me how to fix it. All I could get were some vague references to obscure "Machine Language routines interacting non-synergistically because of an asynchronous flip-flop."

But sometimes robots *really* bug me. Everywhere I go, little metal cylinders with articulated arms are following people down the street, beeping and chirping. The streets these days sound like the jungles of Tran-tor. Don't get me wrong, I like Murphy, but he annoys me at times. He never comes when I call him, and he gives me a hard time, especially when he's around other robots.

One day at the Barcode Bonanza Supermarket, I called Murphy to come over and put a 200 pound bag of kitty litter in the cart. No Murphy in sight. But a grimy, rusty contraption rattled over. It had a giant safety pin through its body and a scrub brush dyed purple strapped on top of its view screen, and threatened in an obnoxious monotone, "MR3 here, you jerk. Put fresh batteries in my power pack or I'll blast a hole through your arm with my laser pistol." Just as I was about to rip its chips out, its owner appeared and told it to go steal a steak. Murphy? He was off in the next aisle trying to get the attention of a sleek new Model 77....

Those robot wait-units in the burger joints are worse than the food. Once, on a long trip, I stopped at a Valley Burger place. Numb from ten hours on the road, I wearily poured myself into a booth and started to relax. Immediately a robot with an idiotic grin (no doubt permanently burned onto its screen), and a plaid mini-skirt painted on its polyflex body cylinder rolled up to get my order.

"Fer sher. Fer sher. What's your order, cutie?" it asked with a plastic politeness no human being could ever achieve.

"Bacon burger, fries, and coffee," I mumbled, sinking into the cushions and lighting a cigarette.

"Totally tubular order, big boy. Fer here or to go?"

"Here."

"Ya want dessert with that? Hot apple pie's on special. Awesome to the max...."

"No pie," I interrupted.

"That'll be \$48.65, hot shot."

As I put my credit card into its slot, I heard the machine mumble at low volume, "Another grody order. I'm doomed. I'll never make my quota so I can be reprogrammed for the lunar mines." That's

Murphy and Me continued

going too far, I thought to myself. I'll never feel sorry enough for a robot to let it sell me something I don't want.

Anyway, this is all beside the point. After we left the Barcode Bonanza, I had Murphy take the groceries out to the car and wait for me while I checked out the new manager of the gift shop at the mall. No dice.

"Struck out again, huh boss?" Murphy commented as he docked with the car's guidance computer.

"Not another word, rust bucket, or I'll have you scrapped and recycled into one of those pre-school word processors."

Sitting at home, I began thinking about how all these personal robots, like pets, have taken on the characteristics of their owners. That explains all the weird robots rolling around.

"Murphy, bring me a martini, please," I called out. Moments later my robot obediently rolled up, saying "Here's your martini, boss."

That punk robot at the supermarket — what a pain. But how about the one at the dentist's office last week? What was her name? Flossie. Give me a break. What next?

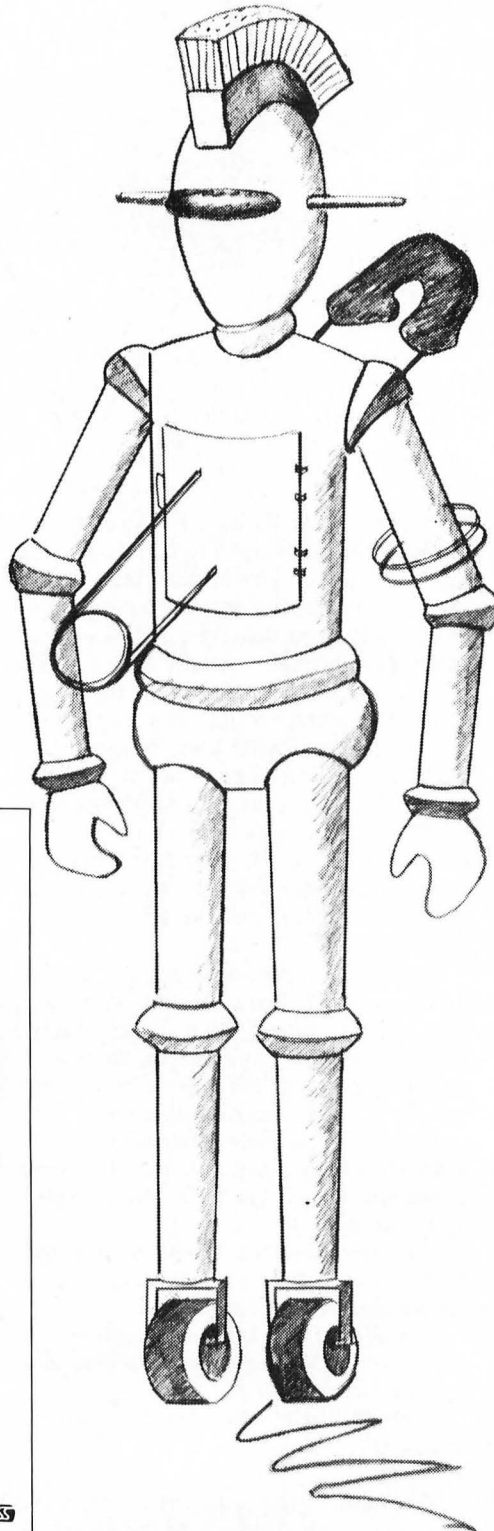
"Murphy — play the piano for me."

"Yes boss. Any requests?"

"Something quiet."

As Murphy rolled up to the piano and began playing, I sipped slowly on my martini and drifted off, remembering my first efforts at programming him to play the piano. That was when he had only one arm and one finger. After weeks of tedious coding, I turned him on and we played the

The program to coordinate the two hands was a nightmare...Murphy almost destroyed himself trying to play crossed hand passages.



right hand part of *Chopsticks* together. It wasn't perfect, and he missed a lot of notes, but what a thrill to hear my very own robot (the one I built myself) play the piano for the first time.

The biggest problem was getting the hand to find the right key at the right time. Small errors became large ones after a few loops through the finger-positioning algorithm. The only scheme that ever worked was to put magnetic markers on the keys and sensors in his hand. Eventually, I reduced the markers to just middle C and the C's two octaves above and below. But I had to learn 88-bit assembly language for the stepper motors.

The real fun started when I added more fingers and a left hand. The program to coordinate the two hands was a nightmare, since I had to write it in Pascal (ROBACH and MOZOFT didn't exist back then). Murphy almost destroyed himself trying to play crossed hand passages. Eventually I got all the timing loops coordinated — after I read the manuals and found out how to code these archaic subroutines.

The martini and piano music were starting to have a noticeable effect on me and I thought back to the day when I finally had the entire left hand and all five fingers rigged up — took all weekend just to install the hardware and wire the servomotors into the controller card. I loaded the demo program and Murphy dived into the most spectacular performance of the Ravel *Concerto for the Left Hand* I ever heard. Later, when I had the coordination perfected, I had him play a couple of my favorite old Broadway tunes, as I sang along. No, I will never teach Murphy to sing. It might take me weeks to find the POKE to shut him up.

I drained the martini and regained consciousness with a sudden jerk, realizing Murphy had just finished the song.

"Murphy, How about another round?"

"Right away boss."

"What was that song you were playing?"

"*Smoke Gets In Your Eyes* — it's your favorite tune on the Quiet Menu."

"How come you never play it then?"

"Hey boss, you want that martini with an olive?"

"You know I hate olives. I thought I had deleted all references to olives in your barkeepers module."

"But boss, I was interchanging databases with Peter, the robot next door, and he said the first principle of tending bar was to have plenty of olives."

"Murphy, I thought I told you not to use the modem when I'm not home. Bring me that martini. Now! Then I want you to go polish all my socket wrenches."

"Boss — No! Please don't take me apart again...."

Financial Operating System, continued
from page 32.

990 I1=H1/G1*100
1000 RETURN
1010 PRINT:PRINT:END



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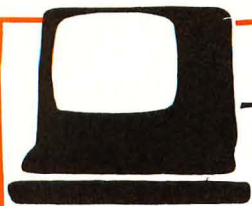
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Reviews CopyArt II

Reviewed by Robert J. Hennessey
Create special effects in any text with this word/graphics processor. _____ **52**

Radio Shack Modem II

Reviewed by Vik Gavande
Four modes, two test functions and several other features make this smart modem a good peripheral. _____ **54**



APPLE® /SIDE



Article Hello Hider

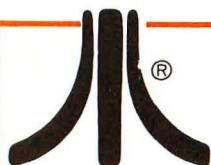
by Paul R. Taylor
If you never seem to have enough disk space when you need it, try this utility. It frees space on your disk for more programs and data files. _____ **62**

Reviews AppleWriter for the IIe

Reviewed by Fred Condo
You will find everything you have come to expect from Paul Lutus software in this sleek new version of *AppleWriter*. It takes full advantage of all the IIe's enhancements and cleans up the problems of older versions. _____ **68**

Bank Street Writer for the Apple

Reviewed by Jon Voskuil
This word processor is easy enough for a child to learn but has features to accomplish all basic word processing tasks. Developed specifically for children at the Bank Street School, this simple, foolproof word processor is great for the whole family. _____ **71**



ATARI® /SIDE



Reviews Spell Wizard

Reviewed by Richard E. Herring
With this tool you never need to re-print a document because of faulty spelling. _____ **37**

AtariWriter

Reviewed by Arlan Levitan
Atari lovers laud this intricate but friendly word processor — the most versatile available for the Atari. _____ **38**

Bank Street Writer for the Atari

Reviewed by Robert Riggs
This word processor is easy enough for a child to learn but has features to accomplish all basic wordprocessing tasks. Developed specifically for children at the Bank Street School, this simple, foolproof word processor is great for the whole family. _____ **41**

Seikosha AT-100 Printer

Reviewed by David Plotkin
Here is an economical peripheral for your Atari. _____ **42**

Article Exploring The Atari Frontier

by Alan J. Zett
Remember *the short* demo program at the end of our last installment? This time we'll take it apart and see how it works. _____ **45**



PC/SIDE



Reviews The Volkswriter

Reviewed by Steve Birchall
Everyman's PC word processor puts function keys to work to save you time for the real writing. All the features you need are available with one or two keystrokes, and a HELP menu is always on tap if you forget. _____ **56**

The Word Plus

Reviewed by Fred Condo
Check your typos against the standard 45,000-word dictionary, and compile your own dictionaries on this sophisticated spelling checker. _____ **59**

SPELL WIZARD

Reviewed by Richard E. Herring

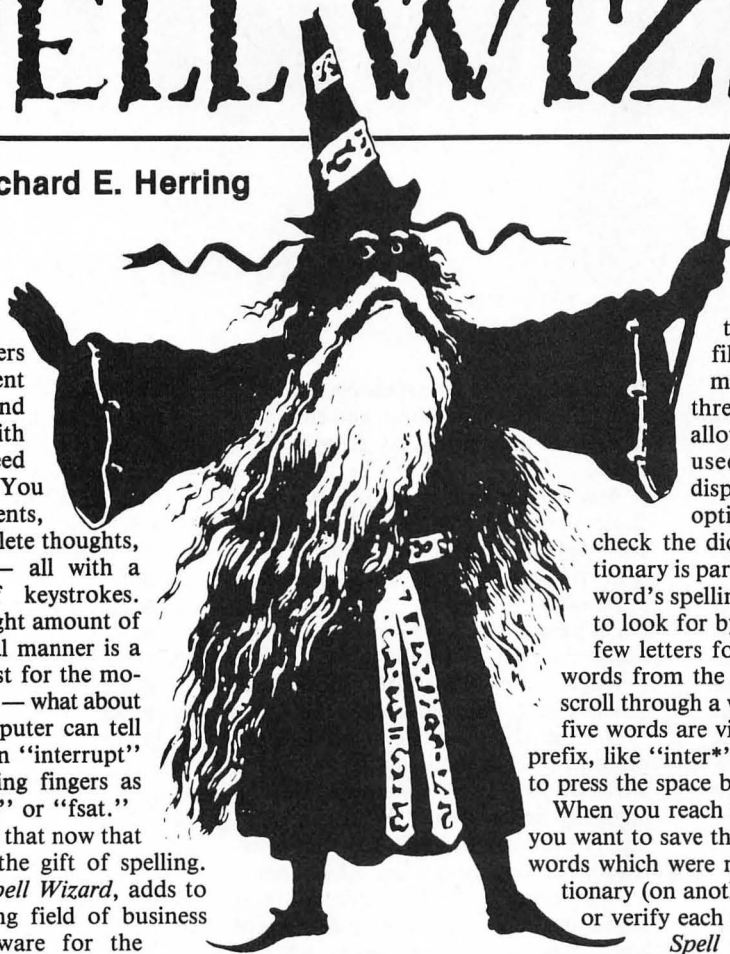
Most computer owners have a strong attachment to word processing, and with good reason. With this tool, you never need to retype a document. You can reorganize documents, insert new thoughts, delete thoughts, and correct spelling — all with a minimum number of keystrokes. While presenting the right amount of information in a logical manner is a task which falls, at least for the moment, to a human writer — what about spelling? Surely a computer can tell me how many r's are in "interrupt" and catch my wandering fingers as they type another "hte" or "fsat."

My Atari can do just that now that Datasoft has given it the gift of spelling. Their new program, *Spell Wizard*, adds to the less-than-burgeoning field of business and professional software for the Atari computer. *Spell Wizard* comes in a ring binder with fifteen pages of documentation, a quick reference card and two diskettes — a program disk and a dictionary disk.

Using *Spell Wizard* is a snap. When it's loaded, it automatically determines whether you have a one or two drive system. Then it presents a four option menu. You can proofread a file, look up dictionary words, print dictionary words or exit the program. The last option boots whatever disk you have in drive one. (No more turning the power off and on to get to another program.)

Choosing the option to proof a file gives you a directory of your data disk, with a request to identify a specific file. *Spell Wizard* reads that file, displaying the number of words read and the number of unique (unduplicated) words. This function alone will make *Spell Wizard* near and dear to the hearts of writers. While the total number of words tells you how long-winded you are, the number of unique words gives you some idea of the level of your writing. A high percentage of unique words indicates that your prose is too flowery.

Next, it compares the words to the main dictionary on the second *Spell Wizard* disk. This process occurs quickly. (A forty sector file containing 826 words, 384 of which were unique, was compared to the main dictionary in a minute and forty-two seconds. A file six times that long took just over three minutes.) The program then asks if you want to check



unrecognized words against a user dictionary. You can update your user dictionary with new words after each file is proofread.

If any unmatched words remain, the program allows you to correct them after once again loading your text file. Each word which *Spell Wizard* can't match appears highlighted within the three lines of text surrounding it. This allows you to see the context in which it was used. As each unmatched word is displayed, the program allows you three options — correct the word, continue, or check the dictionary. The option to check the dictionary is particularly useful if you are not sure of the word's spelling. You can tell *Spell Wizard* what word to look for by typing the whole word or just the first few letters followed by an asterisk (wild card). Any words from the dictionary which match your input will scroll through a window in the middle of the screen. Only five words are visible at a time, so if you use a common prefix, like "inter*" to look for "interrupt," you will have to press the space bar to stop the scrolling.

When you reach the end of the file, *Spell Wizard* asks if you want to save the corrected file. It also lets you save any words which were not in the main dictionary to a user dictionary (on another disk). You may save all of the words or verify each one.

Spell Wizard does impose some limitations. Although it reads and counts the words in long files, it will not check their spelling if the number of unique words exceeds 1000. You must break your text file into two shorter files and process them separately. Depending on your writing style, it will probably take a text file of at least 120 disk sectors to reach this limit. Also, *Spell Wizard* will not check for capitalization or grammar. (It does not know if you have used "there" or "their" incorrectly.)

Each variation of a word must exist in the dictionary for *Spell Wizard* to recognize it. It won't recognize the word "triggers" if it is not in the dictionary, even if "trigger" is. Although called a "dictionary," it only checks spelling — *Spell Wizard* contains no definitions. Finally, an early version of *Spell Wizard* has a small bug. Corrected files are always saved with exactly the same number of characters as the original text file. If you correct the spelling of a word by adding a letter, the last character will be deleted from the saved file. Datasoft has corrected this problem in the programs now being shipped, however, and they will upgrade early versions.

Limitations aside, this is an impressive program. The main dictionary contains 33,000 words ranging from "a" to "zucchini." The program is entirely Machine Language — you won't have time to get a cup of coffee while using it. It reads any file created with standard Atari DOS, so you can check those long sections of text in your BASIC adventures or PILOT microworlds. The user dictionary almost builds itself. And, if you are not impressed by all that, can you get 264,000 characters (that is 33,000 words at an average of eight characters each) on a single Atari disk?

From Datasoft Inc., 9421 Winnetka Avenue, Chatsworth, CA 91311. System Requirements: 32K Atari with optional printer. Suggested retail price: \$79.95.

ATARIWRITER

Reviewed by Arlan Levitan

Given a proper printer, *AtariWriter* is an excellent and well-designed writing and printing tool. It is a worthy successor to all previous Atari word processors, and the culmination of a careful examination of what John (or Joan) Q. Public really needs for home or light business word processing.

AtariWriter's high level of quality comes as no surprise to dedicated Atari watchers, however. It had long been rumored that Bill Robinson, author of *Text Wizard*, had been lured by Atari from work on a new release of "The Wiz" and engaged to produce a new word processor. Robinson's attention to detail and user-friendly operation pervade *AtariWriter* and make it a joy to work with.

AtariWriter in Action

On booting up the 16K cartridge based program, you stare at the Atari logo for a few seconds while the system loads the Disk Operating System (DOS) from a diskette you supply. Once DOS is loaded, the familiar Fuji symbol disappears and *AtariWriter's* main menu is displayed.

In disk based systems, a maximum of 20,704 bytes of memory are available for text entry. This translates to an in-memory capacity of about fifteen double-spaced pages of text. You can create longer documents by chaining files together. On a cassette based system, a maximum of 26,332 bytes are available since DOS is not used.

I can already hear the shouts out there — did you say cassette? I sure did. While using a disk for text storage is certainly faster and more convenient than tape, *AtariWriter* works just fine with the Atari 410 or 1010 program recorders.

From Atari, Inc., 1196 Borregas Avenue, Sunnyvale, CA 94086. System requirements: 16K Atari 400/800/1200. Suggested retail price: \$79.95.

Just remember to save multiple copies of your files on tape since cassette data storage is inherently less reliable than disk.

AtariWriter's main menu presents a choice of eight "entrees." You select each option by entering its first letter (shown in inverse) with a single keystroke.

Let's examine the "Format Disk" option first, which although of limited practical use, illustrates how well thought out *AtariWriter* is. Selecting "F" from the main menu brings up a prompt: "FORMAT DISK — ARE YOU SURE, Y/N?" Responding with anything other than "Y" or "YES" aborts the operation. This design is extended to any operation which could possibly result in the destruction of large amounts of data. Attempting deletion of large blocks of in-memory text or writing over existing disk files also requires verification. I've lost more than a few pieces of work due to careless actions, and I welcome these prompts. They are not excessive and do not become tedious with extended use of *AtariWriter*.

You use either the "C" (create) or "E" (edit) menu selection to create a new file. If no file is currently in memory, the end result is the same. You are presented with *AtariWriter's* Edit Mode screen. You normally use "C" if you finish editing a file and want to begin a new one. Create will prompt you for verification before destroying your old in-memory text and only then proceeds with a fresh edit screen for your new project.

The default Edit screen is 21 lines high with 36 characters per line. When you enter the Edit mode, a Print formatting block, showing the default values of print options, is automatically inserted as the first line of your text. The bottom three lines of the screen continually display your current tab settings (which you may change from the program defaults), the name of the disk file text

was last loaded from or written to, and the current line and column position of the cursor.

Fine cursor movement is via the familiar CTRL arrow keys of the Atari keyboard. Gross cursor movement commands include:

- CTRL/A — Beginning of Line
- CTRL/Z — End of Line
- SELECT/T — Top of File
- SELECT/B — Bottom of File
- OPTION/B — Move Up One Screen
- OPTION/B — Move Down One Screen

Get the picture? The commands are not only useful, but more importantly, their key assignments make sense and are easy to remember.

You enter all text in Insert mode. This means that you must take corrections by deleting unwanted text rather than typing over it. While this may sound cumbersome, in practice it is not. As a matter of fact, most writers I know prefer this type of arrangement. Text deletion is simple. Single characters, text to end of line, marked blocks of text, and all text to end-of-file are easily deleted.

Text entry is quick, smooth, and remains so even when memory is almost full. You may verify the amount of free memory left by pressing OPTION/F. As in *Text Wizard*, word wrap is automatic. If a word does not end by the time you reach the right margin, it is moved down to the next line.

A valuable feature is the "fail-safe buffer" with a capacity of about thirty lines of text. For instance, if you use the delete to end of line function (which does not ask for an affirmative reply) and decide you really didn't want to erase those golden pearls of wisdom, pushing START/INSERT will rescue the last deleted block of text from the bit-bucket and reinsert it in its original location. In addition, you can use the fail-safe buffer to move and duplicate marked blocks of text.

The search and replace functions could be a bit more polished. The global replace function is fine, but I found it impossible to define a replacement string just once and do a selective search and replace through an entire file. This is the one spot in *AtariWriter* where the number and frequency of prompts were too tedious for my tastes. Another limitation is the program's refusal to accept control codes as part of a search or replace string.

Additional editing features are icing on the cake. The use of CTRL/P as a paragraph marker eliminates the need for entering indents at the beginning and blank lines at the end of paragraphs — a nice touch. Files stored on tape or disk may be merged into your in-memory text. You can even selectively change individual letters from upper to lower case and vice-versa.

Printing with *AtariWriter*

Extensive print formatting commands are available. Text may be centered or blocked right. While a ragged right margin is *AtariWriter's* default, you may opt for both left and right justification. Justification may also be switched on and off within the body of your document.

You may set the top, bottom, left and right margins, and number of lines per printed page according to your tastes and change them on the fly. You may also modify paragraph spacing and indentation. Footers, Headers, and Auto Page numbering are supported and work well with most printers. Numbering indented lists is also possible. This is especially helpful for printing short outlines.

Special print functions such as underlining, sub and superscripts, double column printing, and elongated, compressed, and proportional character sets are supported on some printers, most notably the Atari 825.

AtariWriter's most impressive feature is its Print Preview option. This feature allows you to check how your document will look on paper before printing it. And in Print Preview mode, *AtariWriter* is page as well as file oriented. You select Print Preview from the edit mode by pressing OPTION/P. You are then asked if you wish to preview the entire file. If you answer yes, one page of your text is formatted at a time and presented to you in a form you may inspect for correct appearance and layout. *AtariWriter* overcomes the restrictions of its thirty-six column display by turning your screen into a scrollable window which you may move over a representation of what would be printed based upon the contents of your text file. The model is

actually held in memory and can preview documents up to one hundred thirty-two columns wide.

The advantages of using Print Preview should not be discounted. Its regular use will reduce both your printer paper expenses and level of frustration. I first came to appreciate it when producing a rush document for work. The text contained large amounts of column oriented data. Without Print Preview, I would have been tearing my hair out at four in the morning while my printer hammered away at my umpteenth attempt to get things just right. As it was, I got to sleep before midnight with my perfect columns of text safely tucked beneath my pillow. Print Preview, I love you.

If you elect not to preview the entire document, you will be prompted for the beginning and ending page numbers to preview. This is especially useful if you have already previewed and corrected a number of pages. No need to waste time looking at those again!

You press ESCape to exit from print preview mode and return to the main menu. As a matter of fact, pressing ESCape returns you to the main menu from Edit mode or any prompt without disturbing your working text.

Filing Around

The "Save File" option transfers a copy of your in-memory text to disk or cassette. It's a good idea to save the file you're working on every so often so that a system or power failure will be a minor rather than major catastrophe. Admittedly, this is more practical for disk users, given the length of time associated with saving data to tape.

The "Index of Disk Files" option displays a disk directory of Drive #1 only, although you may save or load data to and from any drive. You may print the directory as well.

The "Load File" option transfers text files saved on disk or cassette into memory for editing or printing. If you attempt to load a file over text already in memory, you will be asked "ERASE FILE IN MEMORY? (Y/N)", in case you meant to save your in-storage work first.

"Delete File" erases the file you specify from your data disk. You are prompted here also for confirmation since no facility exists within *AtariWriter* for locking files against deletion. (Wild cards are not permitted here or in response to any prompt that asks for a file name.)

The "Print File" option takes your in-memory file and slaps it on your trusty printer, which is, after all, what this

whole business is about. You may opt to print an entire document or a range of pages. Once started, you may abort the printing process by pressing the BREAK key.

Printer Support

AtariWriter fully supports only Atari printers, namely the 1025, 825, 820, and 822 models. The 825 is the only one of the four that implements every special printing capability of *AtariWriter* and I was disappointed to hear that it has been discontinued. Fortunately, Centronics (the folks who made the 825 for Atari) still markets its Model 739 printer which acts just like an 825 as far as your Atari is concerned. It boasts dot graphics, bidirectional printing and improved single sheet loading to boot.

What about folks who already own perfectly fine printers made by other manufacturers? *AtariWriter* doesn't know anything about those printers' control codes for special functions. While both the letter that accompanied my review copy and the documentation refer to *AtariWriter* drivers for other popular printers being available from the Atari Program Exchange (APX), no such drivers are available as of this writing. You should call APX at 800-538-1862 (800-672-1850 in California) to check on the availability and cost of an appropriate driver for your printer before buying *AtariWriter*.

AtariWriter does have a few limitations. Since control characters are not represented on the screen in their actual internal form, you can't use it as a source text editor for languages like Atari BASIC, which makes heavy use of those characters. And though a form letter option of sorts is built into the program, it's a far cry from a true mailing list merge.

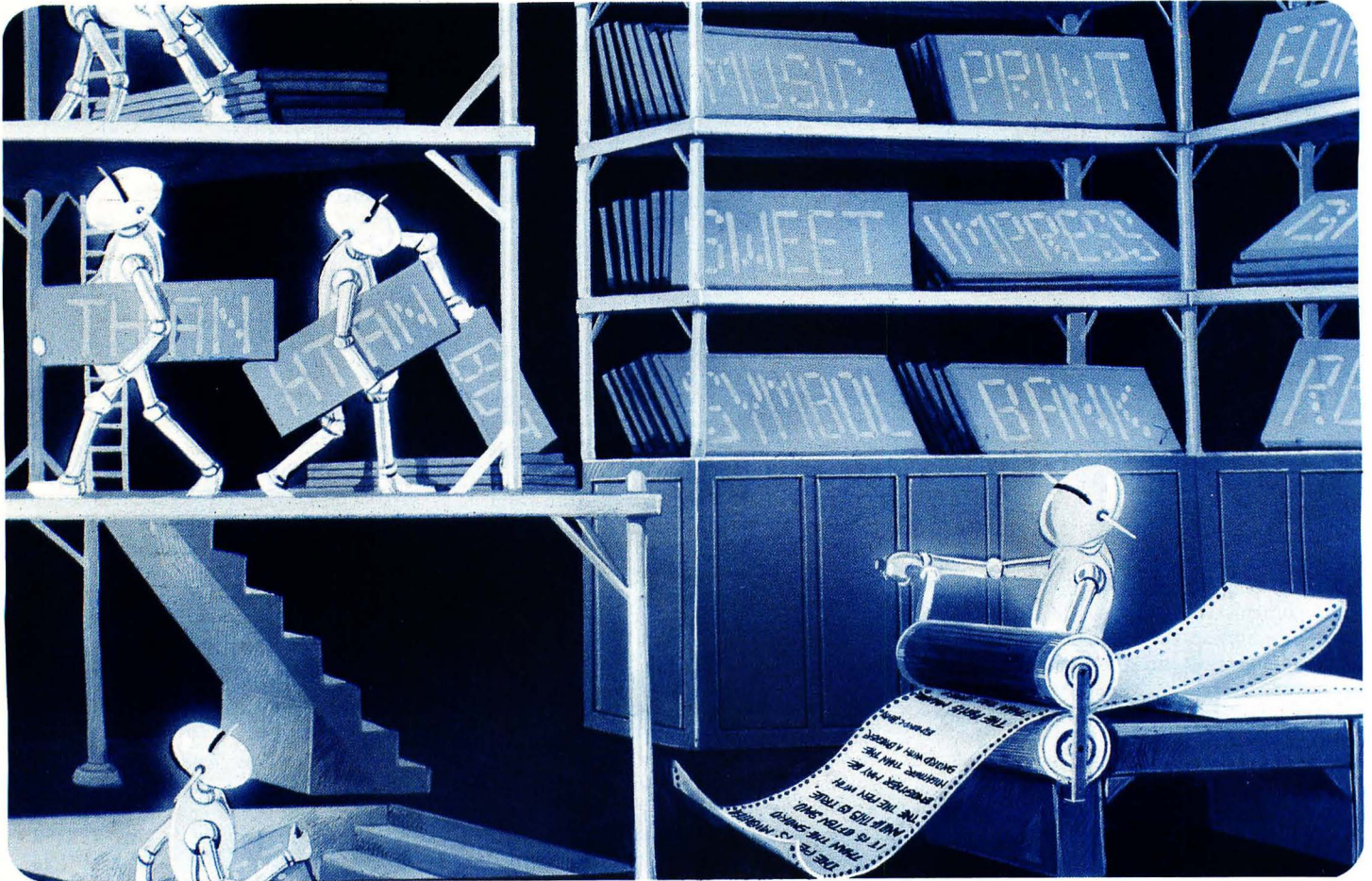
Back on the upbeat side, disk files created by *AtariWriter* are in standard DOS format. This makes *AtariWriter* files easy to manipulate with other programs, including DataSoft's new *Spell Wizard* spelling checker, reviewed on page 37 in this issue. Modem owners can easily transfer *AtariWriter* files over phone lines using any terminal program with upload and download capabilities.

The documentation supplied is lucid and straightforward. The manual is fully indexed and an included function summary card makes finding command information a breeze.

In short, *AtariWriter* is my first choice for word processing honors on the Atari. With a supported printer, it's versatile and easy to use. At only \$79.95, it's a true bargain and hard to be beat at twice the price. ☐

Microtext 2.0

This issue's Front Runner is **MICROTEXT 2.0**, **SoftSide's** BASIC word processor for the Apple II, II+, and Iie, the Atari 400/800/1200, the TRS-80 Models I and III, and the IBM PC. **MICROTEXT** allows you to edit and print text, search through it, and store it on disk or tape.



SOFTSIDE SELECTIONS

FRONT RUNNER

Microtext 2.0 for the Apple, Atari, IBM PC, and TRS-80. by Jon Voskuil. Modifications and enhancements by the *SoftSide* programming staff.

This issue's Front Runner is a BASIC word processor with editing, printout, and even search commands.

TRS-80® VERSION

Life II Disk Version Bonus
by Leo Christopherson

King II Program
by John F. Gabriel

IBM® PC VERSION

Hopper Program
by Howard Wolkow. Translation by Kerry Shetline.

APPLE® VERSION

Photon Flyers Disk Version Bonus
by Michael A. Hansen

Football Program
by Matt Clark

ATARI® VERSION

Family Tree Organizer Disk Version Bonus
by Fred Coffey

Screamin' Demon Program
by Greg Schroeder

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The Arabian Nights for the Apple, Atari, IBM PC and TRS-80.

The daughter of the Caliph of Baghdad lies in a death-like trance, the victim of the evil magician Roxor's spell.

ATARI®

Bank Street WRITER

for the Atari

Reviewed by
Robert L. Riggs

Perhaps you sold the family typewriter to buy a printer for your system. If so, you have probably enlarged the credibility gap with family members who need to type but don't want to wade through all the intricacies of the *Atari Word Processor* or *Letter Perfect*. Don't despair. *Bank Street Writer* will solve your problem.

B.S.W. is a word processor for the whole family. It's easy to use, well prompted and entirely logical in its approach. Available for both the Apple® (see review on p.71 of this issue) and the Atari, each version utilizes the capabilities of its particular computer in fine style. Two disks come with the neatly packaged program. On the back of each is an elementary tutorial to introduce you to the more important and threatening *B.S.W.* methods. Once you've mastered the Write Mode and Edit Mode, you're ready to begin typing your first letter....or perhaps a magazine article about the newest Atari word processor.

As the ultimate test of Broderbund's "Home Word Processor," I sat my ten-year old son down with nothing more than the instructions: "Here's the program, the documentation and a tutorial on the back of the disk. Figure it out." It took him about half an hour to begin using it to write a short story for a school assignment. Now, *that* is remarkable!

B.S.W. allows you to center text. You implement full-screen editing via several cursor control commands. You may ERASE, UNERASE, MOVE,

From Broderbund Software, 1938
Fourth Street, San Rafael, CA 94901.
System requirements: Atari®
400/800/1200XL with 48K RAM.
Price: \$69.95.




MOVEBACK, FIND and REPLACE. A third operating mode, Transfer Mode, presents a menu of options to INIT (format disk), SAVE file, RETRIEVE file, CLEAR the text window, and DELETE a file. Two different printing commands appear on the Transfer Menu: PRINT DRAFT and PRINT FINAL. The first prints your document exactly as it appears on the screen (at 38 characters per line). You'll find this operation useful for proofreading. PRINT FINAL, however, prompts you with various options in order to prepare your final printout. You may select line length, spacing, page numbering, file merging, page ejection, headers and automatic or adjusted pagination.

You use the Utility Program to change certain values such as those the WRITER needs to communicate with printers and disk drives, and to list the name of each WRITER file on your data disk along with its (secret) password, if

one was used. You may set margins, number of lines per page, insert a header and set up page numbers. You can re-enable the Atari audible keyclick, if desired.

On the other side of the coin, however, are a number of constraints in the program which a more advanced user will find frustrating. The program does *not* support any printer font other than the standard 10 c.p.i. It will not underline or elongate/boldface print. Indentations are preset and it does not support right justification of text. On-screen formatting is not possible.

If you are looking for complex operations, stick with one of the more advanced Atari word processors. If, on the other hand, you need a program that the entire family can learn to use in minutes to take the place of the defunct family typewriter, *Bank Street Writer* may be just right for you. 

Seikosha AT-100 Printer

Reviewed by David Plotkin

If you are itching to buy an 80-column printer you should consider the *Seikosha AT-100*. It lacks the print speed or fancy fonts of its more expensive relatives, but it performs the basic printing functions well at a price which can't be beat.

The *AT-100* is the most economical full width printer on the market. (Full width means that it can handle tractor feed paper up to ten inches wide (8.5 inches after removal of the tractor feed edges). The *AT-100* is designed strictly as a low end utility peripheral, and as such, does not sport many of the features which are standard on more expensive printers. It doesn't support such things as italics, condensed font (132 letters per line), underlining, double strike, etc.

The *AT-100* uses tractor feed and prints at a moderate 30 characters per second (CPS). It is small and light (about ten pounds), and is the only printer not made by Atari which has been modified

specifically for the Atari. The most important modification is the fact that it doesn't require an interface or connecting cables. Instead, the *AT-100* comes equipped with a serial cord and an extra serial port, so that you can "daisy chain" the printer just like a disk drive or other peripheral. For example, if you own an Atari 400 and a 410 recorder, you plug the printer cable into the port on the right side of the Atari 400, then plug the 410 recorder into the extra port on the back of the printer. Note that the recorder still communicates with the computer, regardless of whether the printer is on.

Besides the normal 80 character per line print font, the *AT-100* also supports double width characters suitable for titles and such. Neither font supports lower case descenders, (the tail on "g" or "y", for example) which makes the printing look a little odd at times. As a result, small "p" looks just like capital "P".

The *AT-100* uses a relatively wide dot matrix (five wide by seven high), so the dots are quite visible. It can make one or two copies plus an original, and uses a convenient ribbon cassette. Extra cassettes can be ordered from Axiom, and the company plans to make them available through dealers soon.

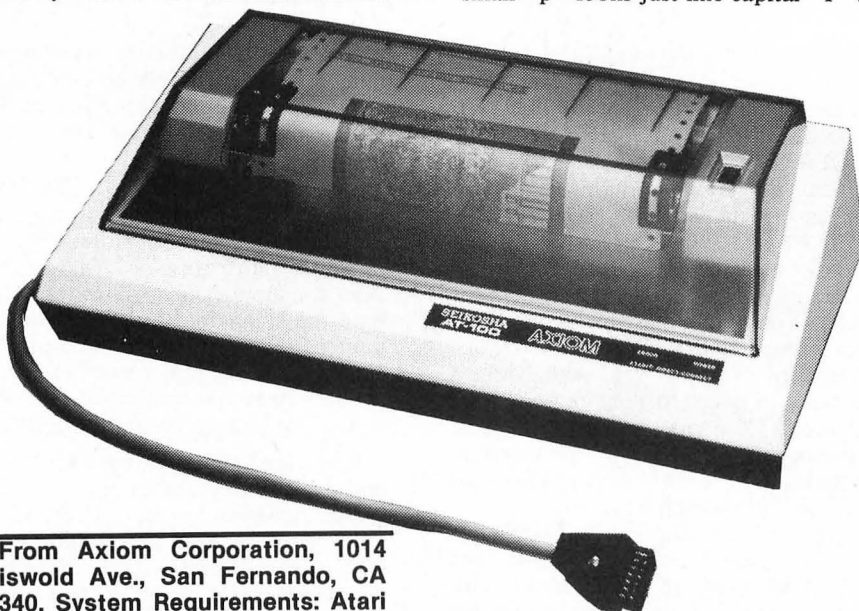
The *AT-100* comes with a good instruction manual, as well as a supplement booklet for use with the Atari computers. The instruction manual gets fairly technical toward the end, but you don't have to understand the technical portion to use the printer. In fact, you don't really need the manual at all (except for three pages on how to set up) to start using the printer. The *AT-100* responds to LPRINT and List "P:", and works with commercial word processors such as *TextWizard*, *Letter Perfect*, *AtariWriter* and *Bank Street Writer*, although it doesn't support all the printing features. The manual neglects to mention that all the numbers referenced are in hexadecimal (Base 16) and that to send a command to the printer you must send CHR\$. For instance, to switch from regular font to double width, the instruction manual says to send the command "SO". Looking up "SO" in the table provided tells you that its number is OE, or 14 decimal. So you type the following into your computer:

```
LPRINT CHR$(14)
```

The *AT-100* allows you to position your printing on the page and repeat a particular section up to 256 times. The instruction manual explains the methods involved quite well.

The supplemental booklet for the Atari version of the printer is extremely useful and well written. For one thing, it is Atari specific so you don't have to read instructions written for another computer and then translate them for yours. The booklet covers all the

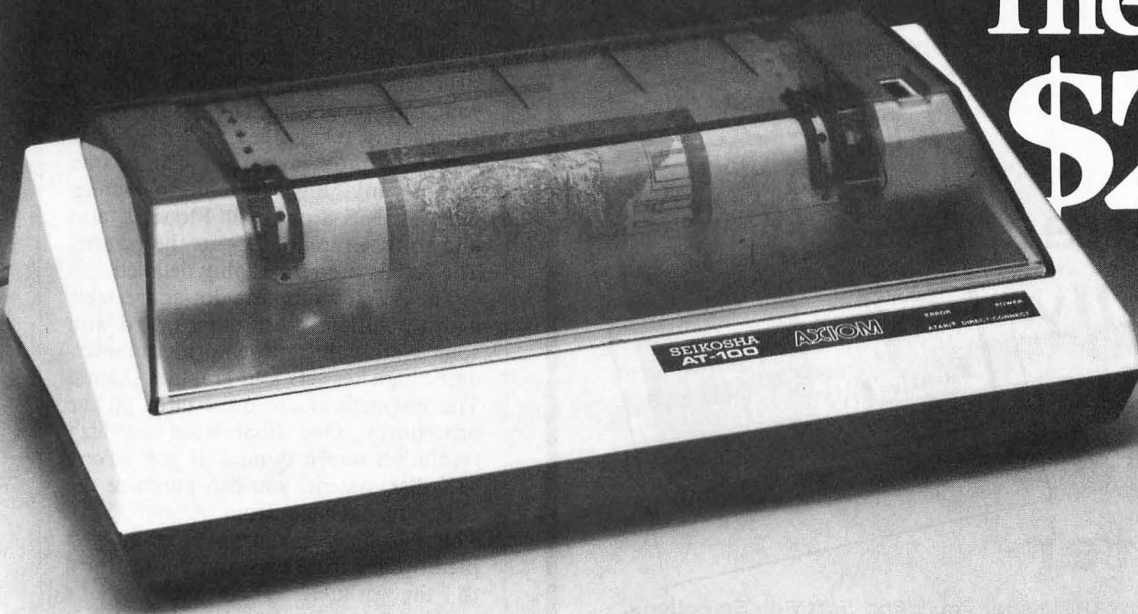
continued on page 44



From Axiom Corporation, 1014 Griswold Ave., San Fernando, CA 91340. System Requirements: Atari 400/800/1200. Suggested retail price: \$299.

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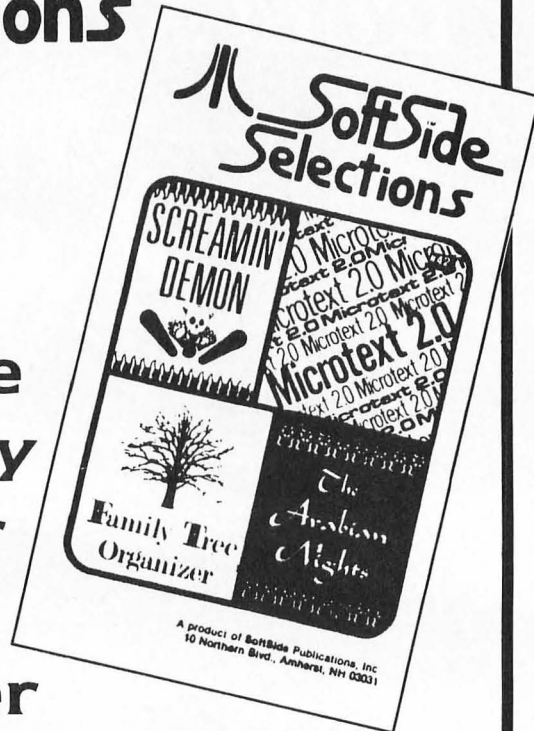
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SoftSideTM Selections

The Magazine Especially For Your Atari[®] Computer



Bound into the center of this issue, you'll find **SoftSide Selections**, the handy, pull-out booklet with program listings for your computer. If you bought your copy of **SoftSide** at a newsstand, your booklet contains this issue's Front Runner, **Microtext 2.0**, a BASIC word processor for the Atari[®], IBM[®] PC, Apple[®], and TRS-80[®].

This issue, **SoftSide Selections** for the Atari features:

- **Microtext 2.0** — you always get the current issue's Front Runner! **SoftSide's** BASIC word processor features editing, printout, and even search commands.

- **Screamin' Demon** — Enjoy pinball action with this simulation of gleaming steel balls, buzzers, bells, and digit counters.

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To order your copy of this issue's Disk Version, or to subscribe to either of the **SoftSide** media versions, see the bind-in cards opposite page 56.

ATARI[®]

Seikosha AT-100 Printer, *continued*

methods to get your Atari to print (including the problems with LPRINT and use of OPEN and CLOSE), and gives examples of what you need to type in to get various printing effects.

Finally, two sample programs are included, fully documented and with instructions on how to include them in your own programs. The first program dumps any text screen to the printer, with or without a border. The second dumps any high resolution screen (GRAPHICS 8 or Antic Mode E, also known as Graphics 7.5) to the printer. The results are remarkably detailed.

The *AT-100* supports dot-addressable high resolution screen dumps, and with some work you can even print out alternate character sets and graphics shapes. The instructions are quite clear on the procedures. One final word on high resolution screen dumps. If you have a 48K disk system, you can purchase the *Graphax* package from Axiom (\$15). This Machine Language program gets picture files from disk and dumps them to the printer. The disk can be autobooted and run, or booted and then called from a BASIC program. You can dump any picture files saved in standard Atari DOS. I have tried *Micropainter* and *Graphic Master* files (both from DataSoft) and the results are spectacular. Reston Publishing's *Paint* does not work because the *Paint* files are not stored in Atari DOS.

The *AT-100* is especially suitable for "starter" systems, i.e., a 16K Atari 400 with cassette recorder. Cassette-based word processing programs, including **SoftSide's** own *Microtext* and the introduction of *AtariWriter*, a cartridge word processor which supports cassette files, make it possible to do word processing on such systems. Up until now, however, you needed to pay \$400+ for a printer, plus \$200 for an 850 interface to get 80 column capability. The *AT-100* changes all that, and could be a great boon to the many owners of "starter" systems. Remember, also, that you can add one of the new full stroke keyboards to your 400 if you don't relish typing on the membrane keyboard.

Overall, the *Seikosha AT-100* is a good value, especially for the computer hobbyist just starting out. It packs a two year guarantee, and Axiom's customer service is fast and friendly. Axiom is even sponsoring a program to loan the printers to user groups around the country. If a group expresses an interest, they send a representative to the group's meeting to present a demonstration. If you need a basic printer, I urge you to consider the *AT-100*.

EXPLORING THE ATARI® FRONTIER

by Alan J. Zett

The Player/Missile Connection: Part II

At the end of last month's article I presented a short PMG demo program to pique your interest (reprinted this month as Listing 1). Although it doesn't do much, it demonstrates a simple use of PMGs. This month, I'll dissect that demo to show how it works. PMGs are versatile because of the many options which affect the PMG display. Knowing what these options are and when to use them is important to understanding the entire PMG concept.

To select any particular option, you use a RAM location, known as a hardware register and its counterpart, called a shadow register. The hardware registers are wired directly into the ANTIC and GTIA processor chips for immediate use, while the shadow registers contain data accessible to and necessary for the Operating System (OS). This usually takes the form of a copy of all the data written into the hardware registers (for more on shadow/hardware registers, see *Frontier* in Issue 40). From BASIC you access these registers with PEEK and POKE commands. If you looked at the demo listing at any length you should have noticed a few strange POKE commands. To understand what each of these POKES does, we'll take them one at a time and explain what their corresponding registers do. Table One is a list of the registers used in the demo program's POKES.

Setting Up A PMG

In Listing One, the first line GOSUBS to line 500, where it sets up the PMG. Line 500 shows a particularly important setup procedure. Since the PMG structure is like a screen, it has its own set of screen RAM, called PMG RAM. The OS takes care of setting aside memory

for the screen, but for PMGs, the programmer must do it. You need to find a section of memory not already used by the OS or BASIC, and protect it from outside interference. In a sense the OS already does this at power up or whenever the system reset key is pressed. The location called RAMTOP (see Table One) tells the system where the top of memory is. RAMTOP prevents the OS from occasionally putting important in-

formation like screen memory or the Display List in a nonexistent area of RAM. The OS also uses this location to protect itself from using an area of memory that should never be used. Thus we can fool the OS into thinking it has a different amount of memory available by modifying this location. To tell the OS "hands-off," determine how much memory you need, and adjust this pointer.

Table 1

IMPORTANT PMG SHADOW REGISTER LOCATIONS

Hex	Dec	Title	Register Description
006A	00106	RAMTOP	Top of RAM pointer.
022F	00559	SDMCTL	Direct Memory Access Control
02C0	00704	PCOLR0	Player 0 color.
02C1	00705	PCOLR1	Player 1 color.
02C2	00706	PCOLR2	Player 2 color.
02C3	00707	PCOLR3	Player 3 color.

IMPORTANT PMG HARDWARE REGISTER LOCATIONS

Hex	Dec	Title	Register Description
D000	53248	HPOSP0	Player 0 horizontal position.
D001	53249	HPOSP1	Player 1 horizontal position.
D002	53250	HPOSP2	Player 2 horizontal position.
D003	53251	HPOSP3	Player 3 horizontal position.
D01D	53277	GRACTL	Graphics control.
D407	54279	PMBASE	Memory page for PM data.



Program Listing 1

```

10 RESTORE :60SUB 500
20 FOR X=0 TO 35 STEP 2
30 A=A+1:IF A=4 THEN A=1
40 COLOR A
50 PLOT 79-X,Y+6:DRAWTO 79-X,47-Y
60 PLOT 78-X,Y+6:DRAWTO 78-X,47-Y
70 DRAWTO X,47-Y:DRAWTO X,Y+6
80 PLOT X+1,47-Y:DRAWTO X+1,Y+6
90 Y=Y+1:NEXT X:60SUB 400
100 IF Z>50 THEN 60SUB 400
110 W=INT(RND(0)*2)
120 Z=Z+1:POKE 53248,122+W
130 POKE 704,INT(RND(0)*16)*16+10
200 A7=PEEK(708):POKE 708,PEEK(709)
210 POKE 709,PEEK(710):POKE 710,A7
300 FOR X=0 TO 26:NEXT X:60TO 100
400 X=INT(RND(0)*16)*16:Z=0
410 POKE 708,X:POKE 709,X+4
420 POKE 710,X+8:RETURN
500 P=PEEK(106)-8:POKE 106,P
510 POKE 54279,P:GRAPHICS 21
520 POKE 559,46:POKE 53277,3
530 POKE 704,0:FOR X=512 TO 768
540 POKE P*256+X,0:NEXT X
550 FOR X=578 TO 584:READ D
560 POKE P*256+X,D:NEXT X
570 POKE 53248,124:FOR X=708 TO 712
580 POKE X,0:NEXT X:RETURN
700 DATA 34,65,93,119,93,65,34
    
```

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Exploring The Atari Frontier, *continued*

The value stored in this location is in the form of a one byte absolute page number. A page in computer terms is 256 bytes, so four pages equals 1K of memory. A full 64K (including ROM and RAM) Atari has 256 pages numbered 0-255. What line 500 does is set the Top-of-RAM-Pointer back eight pages from whatever it was previously. I later discovered that only four pages were needed. How to select the proper amount of memory will be covered later.

Another important PMG POKE is in line 510. ANTIC and GTIA need to know the PMG RAM's location. Table One has a location marked PMBASE, which must contain the absolute page number of the PMG memory location. Since you have specified this address through the RAMTOP, all you have to do is POKE in the currently residing value.

Sometimes the location in RAMTOP is not pointing to the beginning of PMG data. This can happen when more memory has been reserved for such things as machine language subroutines, etc. In that case you should keep track of what page the PMG data is on with a separate variable. Once this location has been given a value, ANTIC and GTIA will use it for all of the processing for PMGs.

Memory Manager

After PMBASE, in line 520, the next important location is 559 decimal. It is listed in Table One with the name SDMCTL. This is the DMA (Direct Memory Access) control register. In simple terms, this technique allows more than one part of the computer to read different sections of memory. Normally, the 6502 microprocessor reads and writes memory over a set of internal wires called the data bus. To avoid confusion and communication conflicts when another computer circuit wants to use these data lines at the same time, DMA tells the 6502 to wait until the other circuit is finished. It literally means that other microprocessors like ANTIC and GTIA have a Direct Memory Access priority over the 6502 CPU.

SDMCTL contains a wide variety of crucial information pertaining to the other DMA functions of the OS, so be careful of what you POKE here. To pack so much information into a small place they use a technique called bit-mapping. This is useful when a condition can be either true or false, yes or no, on or off. Each individual bit represents one of two possibilities. If the bit is zero, this usually means the condition is not valid. If the bit is one, the condition is

true. This method allows up to eight individual condition flags (bits 0 through 7) in one byte. In SDMCTL's case, only bits two and three implement PMG DMA. Figure 1 is a representation of the SDMCTL register's bit map. Normally from Atari BASIC this register contains the value 34 decimal (22 hex); bits 1 and 5 are set (equal to 1) and all others reset (equal to 0).

Bit by Bit

Bits 0 and 1 are the playfield select bits. The Atari has the ability to make the playfield screen (the area where normal text and graphics are displayed) one of four possibilities. When bits 0 and 1 are both zero, the screen display is off. This technique has been used in many *SoftSide* programs. Whenever a program has to modify the Display List, it can get the video sync hardware confused. The screen flips and flickers and when it finally stops, the Display List can be totally messed up. POKEing 559 with a number that has both of these bits off (0 is standard) will cause the screen to "go away" so the user doesn't have to see the mess. This method is useful for setting up a display on the screen when the programmer doesn't want the user to see the setup procedure. To re-enable

continued on page 48

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Figure 1.

SDMCTL — DIRECT MEMORY ACCESS CONTROL (\$022F)

A shadow register for DMACTL (\$D400) which writes data into the DMA control register in hardware.

Bit Map:

Bit:

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

B7, B6 — Not used

B5 — 1 Enables antic DMA instruction fetch.

**B4 — 1 Enables single line PMG resolution.
0 Enables double line PMG resolution.**

B3 — 1 Enables player DMA.

B2 — 1 Enables missile DMA.

B1, B0 — 0, 0 No playfield DMA.

0, 1 Enables narrow playfield DMA. (128 color clocks wide)

1, 0 Enables narrow playfield DMA. (160 color clocks wide)

1, 1 Enables wide playfield DMA. (192 color clocks wide)

Exploring The Atari Frontier, continued
the *normal* playfield (turn the standard screen display back on) use a POKE that has bit 0 reset and bit 1 set (34 is standard).

The Atari has two special playfield modes that are normally unavailable from BASIC. If bit 0 is set and bit 1 is reset, the *narrow* playfield appears. Normally in GRAPHICS 0, the screen is 40 by 24 characters. Two POKES change the position of the right and left margins within the playfield area (in GRAPHICS 0 the playfield is a blue box called the text window). Location 82 controls the left margin in the text window while location 83 controls the right. Both require that a number between 0 and 39 be POKEd into them. If you set the right margin to less than the left, strange things can happen. Normally location 82 defaults to a value of 2 to make up for overscan on some older or low-cost TV sets. The right margin is set to 39. Even though only 38 characters on the display are used from BASIC when these margins are set, the playfield under all 40 positions continues to have the blue background displayed.

When the narrow playfield option is specified, the playfield shrinks by a predetermined size. In the case of GRAPHICS 0, this makes the blue text window become thinner when displayed on the screen and takes less screen memory. When both bits are set, the *wide* playfield mode is selected. Now the text window expands to stretch all the

way to the right and left edges of the screen. Note that in both cases the actual number of bytes per line is also modified, and that the playfield does not apply only to text modes such as GRAPHICS 0.

Enabling Players and Missiles

Bit 2 is the Missile enable bit. If you plan to use Missile graphics, set this bit to 1, otherwise reset it. We haven't discussed Missiles, and won't until the subject of Players is well under way. Bit 3 is the Player enable bit, which in the demo is set to 1.

If either bit 2 or 3 is set, then bit 4 is the PMG thickness. Players and Missiles can have two different vertical resolutions — 256 or 128 separate lines in the Y coordinate. In the 128 line mode, the memory size of all the PMGs is half the normal amount and the height of a PMG "pixel" doubles. In the 256 line format (256 bytes, since one line uses one byte), each line is the thickness of a single horizontal scan line of a standard TV raster display.

If you look closely at the screen, you will see that the display actually consists of many horizontal lines of dots. Each row of dots is called a scan line because the electrons that strike the phosphor are scanned or traced onto the front of the picture tube in consecutive rows. In the 128 byte resolution mode, each line of the PMG is *two* scan lines thick. In most cases, this is enough, so why waste the extra memory?

Bit 5 is ANTIC's instruction fetch DMA flag. This bit acts on ANTIC the same way that setting the halt line on a 6502 microprocessor does. When the halt line is set, the 6502 freezes and all data flow ceases within the computer. Similarly, bit 5 is a holding flag for ANTIC's halt line equivalent. However when ANTIC halts, all screen memory processing going to GTIA ceases. Remember that GTIA is still sending out a video signal based on the data coming from ANTIC. The net result is a screen made up entirely of the default background color. The background is a colored border provided by the processor circuitry to fill in the unused portions on the video display.

If the GRAPHICS 0 background is set to red and ANTIC is disabled by resetting bit 5, the entire screen fills with the default red background color. Note that even if playfield select bits 0 and 1 are set, the status of bit 5 takes precedence. In general, if you want to see anything meaningful on the video display, bit 5 must be set. Bits 6 and 7 have no function at present.

Resolution and RAM

Single line resolution takes more PMG RAM than double line resolution. But just how much memory is needed and how is it mapped out? Figures 2a and 2b show a memory map for each resolution. PMBASE is the reference for the starting point of the map, since this varies depending on where it points to.

The numbers along the left-hand sides of the diagram are a relative offset from the start of PMBASE. Remember that PMBASE is a page number, so multiply it by 256 to get an absolute memory address location.

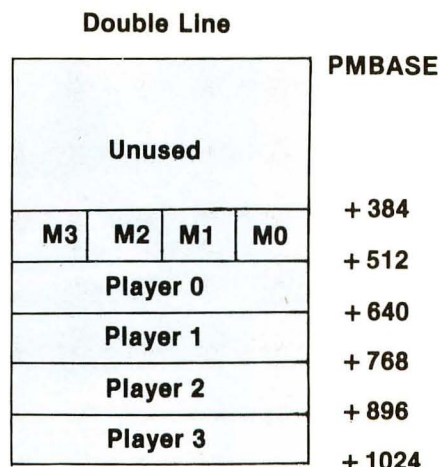
Double line resolution takes 1K of memory while single line needs 2K. The Players always start halfway into the PMG RAM. Notice that a large portion of PMG RAM is not used at the start of PMBASE. This is a good place to put the data from a short machine language program or subroutine. If you use the single line resolution mode and you don't need Missiles, then the first 1024 bytes are perfect for holding the data for a redefined character set.

The next POKE is in line 520 also. This location (shown in Table One as GRCTL) is the other half of the PMG DMA enable bits. Even if all other POKEs have been set up, PMGs will not appear on the screen until these bits are set. Figure 3 is the bit map for GRCTL. Bit 0 enables PMG DMA for Missiles. Bit 1 enables Player DMA. If both bits are reset, then no PMGs appear. If both are set then both Players and Missiles are displayed. In the demo program, the value 3 sets bit 0 and 1.

Bit 2 has nothing whatsoever to do with PMGs, but it does something never documented anywhere, to the best of my knowledge. It deals with the way the hardware handles trigger inputs. When bit 2 is reset (its default condition) trigger inputs from BASIC (STRIG or PTRIG commands) return binary values. If you press the trigger, the hardware returns a value of 0 (Boolean false). When the trigger is not depressed, the hardware returns a 1 (Boolean true). The value of 0 is returned only as long as the button is held down. In hardware terms, when bit 2 is reset the trigger input latching circuits are disabled. If bit 2 is set, the latch is activated.

A latch is a device that acts like a door — it is either open or closed. In this example, normally the door is closed. Now and then people walk through and leave it open. Eventually someone sees the open door and closes it, after making a note that it was opened. The latch holds a value of 1 normally, but when some 0's walk through (trigger pressed), it changes to 0 and tells the program what has happened. To reset the latch to its initial state, reset bit 2. With this POKE, a program can tell if a trigger has been pressed within a specific length of time. Normally you can only check if it is currently being pressed. When this bit is enabled, the trigger ports function just like the normal keyboard port at memory location 764 decimal which must also be reset between inputs.

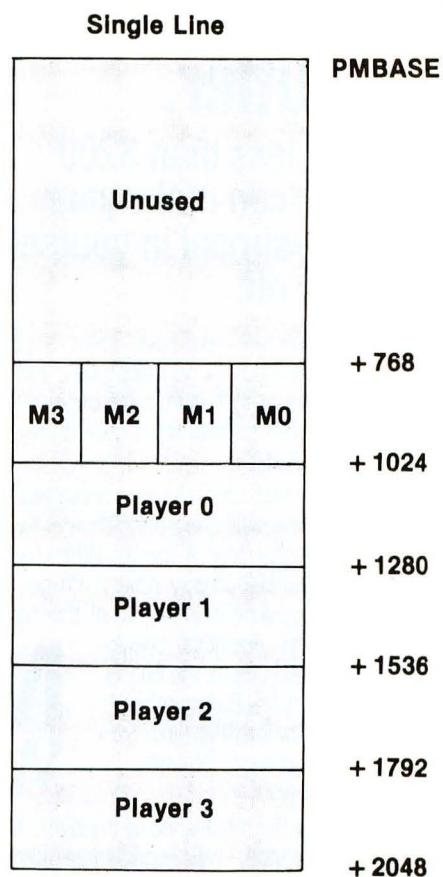
Figure 2a.



The secret of putting color into PMGs is in the first part of line 530. Table One has four consecutive registers starting with 704 decimal (2C0 hex) named PCOLR0 through PCOLR3. POKE these locations with the color number multiplied by 16, plus the luminance number, for each Player. In the demo's line 130 I POKEd 704 (Player color 0) with a random color plus a luminance of 10.

The remainder of line 530 plus line 540 zero the PMG RAM. The reason for doing this is simple. The memory location chosen for PMGs may be filled with old data from other programs, other PMGs, or just plain old scudge. If you position a PMG on the screen before erasing it with zeros (to turn the entire PMG off), you would see a vertical bar of randomly set bits. The variable P points to PMBASE and (referring to Figure 2a) Player 0 starts at an offset of 512 bytes from the beginning of PMG RAM. Lines 550 and 560 read in the PMG shape from data statements and POKE them into the appropriate place within the

Figure 2b.



Player 0 PMG RAM. To find out where any Player or Missile is located, use Figures 2a and 2b, substituting the real address of the PMBASE page number and adding the offsets.

Moving Pictures

Vertical movement is not used in the demo, since I will cover it in another installment. Briefly, two methods are

continued on page 51

Figure 3

GRCTL — GRAPHICS CONTROL (\$D01D)
Writes data to the graphic control register in hardware.

Bit Map:

7	6	5	4	3	2	1	0
---	---	---	---	---	---	---	---

B7, B6, B5, B4, B3 — Not used
B2 — 1 Enables input latches for TRIG0-TRIG3 registers.
0 Resets latches and TRIG0-TRIG3 act as normal.
B1 — 1 Enables player DMA for player graphics registers.
B0 — 1 Enables missile DMA for missile graphics registers.

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Exploring The Atari Frontier, *continued*

available. The first is to zero out the old Player and put the PMG shape data back in a different place. This is effective if the Player makes large leaps in vertical position. The other simple technique is effective for moving a Player slowly up or down the screen. It involves rotating the contents of an entire page of memory. You have to move 255 of the 256 bytes up or down one byte within the page, and then take the byte at the end of the page and wrap it around to the beginning — but more on this in a later installment.

For horizontal positioning, each PMG has a register assigned to it that governs where it appears on the screen display. In Table One, these locations are HPOSP0 through HPOSP3. The registers require a number between 0 and 255 to tell GTIA at what color clock to put the left edge of a PMG shape.

Color Clocks

What is a color clock, you ask? First, make the distinction between *a* color clock and *the* color clock. Each scan line takes a small amount of time to travel across the screen. The GTIA knows where to draw information (or more correctly, at what time to draw it) because of a circuit called the color clock. The color clock rate (also called the oscillator or counter) is synchronized with the sweep frequency of the horizontal scan rate (the time required to draw one scan line), and provides timing signals to the video processing circuits (see "Where Has All the Resolution Gone?" by Tom Flynn in Issue 40). A color clock is a single pulse within *the* color clock, and it determines if the pixel should be lit as the beam passes by. Each scan line has 228 color clocks, but the maximum practical limit is about 176.

Watching the color clock counter is the only way to know exactly where the electron beam is positioned on the scan line at any specific time. If you wanted to plot a GRAPHICS 8 dot on the far right edge of the screen, GTIA would watch the color clock until the time was right to put the graphics dot information into the video signal to make it appear at the right location on the screen.

With PMGs, the position registers correspond to a specific time in the color clock. GTIA watches the clock and compares it to the PMG's horizontal position registers for a match. Since some of the pulses do not occur in time to appear on the screen, PMGs seem to have the ability to move on and off screen. Depending on the overscan of your TV or monitor, color clock pulses 0 through

44 will be too far left of the screen to see and positions 220 through 255 will be too far to the right. The visible portion is from 44 to 220. This figure varies, so a range of 60 to 200 is more practical. In the demo program you'll see that line 570 sets the position of Player 0 at 124, about halfway into the screen.

One Last Detail

Previously, I promised to explain why you must reserve 1K of memory when you POKE 106 to set RAMTOP. For PMGs with double line resolution, 1K is the required amount of memory. However, certain special cases cause complications that need to be checked for.

With RAMTOP, you are near the area where the OS constructs the screen memory for the GRAPHICS modes. If you recall from older Frontier columns, the ANTIC chip has one restriction as to where screen memory is placed. ANTIC can never address more than 4K at one time because of the width of its address bus. When it has to work with screen memory longer than 4K (such as GRAPHICS 8) or memory that overlaps a 4K boundary, it must execute a separate DLI instruction with the LMS option set between processing ANTIC's machine language mode lines.

If the technical explanation doesn't make sense to you, try this one. In the high resolution graphics modes, screen memory has to start at the beginning of a 4K boundary in RAM. The Atari's RAM can have as many as sixteen 4K boundaries. If you accidentally move the screen memory down too far when you reserve space with RAMTOP, the computer will ask you to reserve extra RAM to make screen memory start where it is required. Atari DV subscribers can load the cover program to see a working example of PMGs, and the special case I have mentioned. Though the program uses double line resolution PMGs, I had to reserve sixteen pages (4K) to allow the GRAPHICS 8 screen to work correctly. Whenever a memory conflict arises, bump the RAMTOP pointer back a page at a time until you find the amount that works. Remember though, that this is the exception and not the rule. In general, reserve four pages for double line resolution PMGs and eight pages for single.

Look again at Listing One. See if you can understand how the walls are made to appear as if they are moving. It's done with a technique known as color indirection. Experiment with it and if you find anything interesting, write in and tell us, or send a disk with some examples. Until next time....

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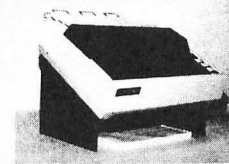


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COPYART II

A Word/Graphics Processor

Reviewed by Robert J. Hennessey

From Simutek Computer Products Inc., 4877 East Speedway, Tucson, AZ 85712. System requirements: TRS-80 Model I/III with 48K RAM. Suggested retail price: \$149.95.



As the editor of a small newsletter, I had looked high and low for a program for my TRS-80 which would simplify the process and beautify the product of my labors. My search ended with *CopyArt II*, a word/graphics processor that allows you to intermix text and graphics on the same line.

Before digging into the features of the program, however, let me explain its origin. Simutek announced a text/graphics processor called *SCP* about eighteen months ago. That program also

allowed the mixing of text and graphics. However, you couldn't print more than one copy at a time. This meant that the operator had to be present to start the printing routine for each copy desired. This was inconvenient, to say the least, as I wanted to print fifty copies of my newsletter each month. *SCP* featured justified copy (text only), setting of all margins, and, on the Epson and Microline printers, enhanced and double strike print in three sizes (now four). You could delete and insert single characters or entire lines. Block moves were possible, as well as automatic text centering.

In February, 1982, Simutek announced an update to the *SCP* program. When the update arrived, it was a totally new program called *CopyArt*. Between then and now, a newly updated version, *CopyArt II*, has arrived.



Figure 1

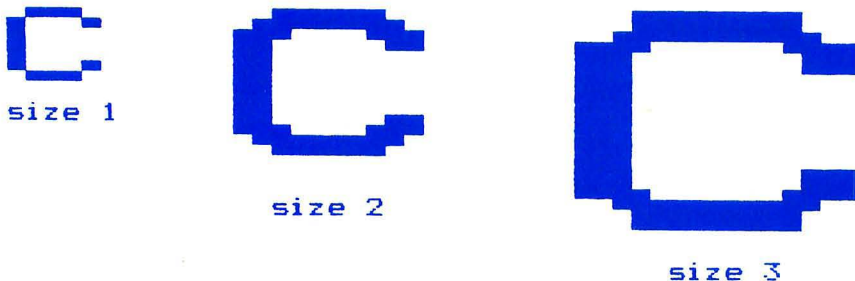


Figure 2

CopyArt II's Many Features

CopyArt II has all of the above features as well as many new and useful enhancements. Probably one of the best of these is a set of alpha-numeric characters. After typing the text desired, you enter four numbers to specify the size horizontally and vertically, to decide on black on white or white on black print, and, finally, to specify horizontal orientation or turn the printing 90 degrees to the right (see Figure 1).

You can alter alpha-numeric shapes in the graphics drawing mode. The size choices range from one to 24. Size two is twice as big as size one and size three is three times as large as size one, etc. (see

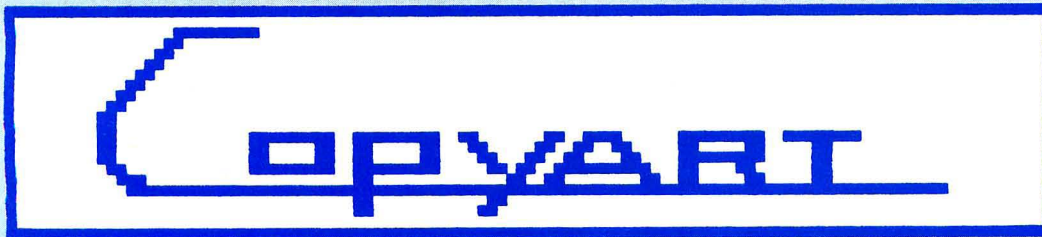


Figure 3



Figure 4

Figure 2). In addition to this alpha numeric set, you can design your own layouts using the graphics mode.

You do all graphics work, as well as Sorting and Math functions, from the Auxiliary Editor. There are two graphic modes; graphic characters (see Figures 1 & 2) and graphic drawing (see Figure 3). You can use a number of sub-commands for graphics. Plotting of lines is possible by setting two points. With a simple command, a line is drawn between them. You can draw circles (Figure 5) and squares with a single command and, with a fill command, fill in a designated area. You can use the same commands in the erase mode to achieve the opposite effect. *Caution — graphics cannot be justified.*

Hi-Res graphics are available on printers that support them, such as the Epson with Graphtrax Plus. They can be tricky, so be cautious. Figure 4 illustrates Hi-Res graphics. On the screen, it is 77 characters wide. When printed, it is thirteen characters wide and the full TRS-80 screen shrinks to about one square inch of printing. Experimentation is the watchword when using Hi-Res.

CopyArt II also performs as a conventional word processor. It does underlining and **boldface** printing and allows the use of various type sizes. There is one drawback, however. Linefeeds must be disabled or the program will not count lines properly. On the Epson, which is what I use, you must set the dip switches in a certain pattern. This is somewhat inconvenient. Simutek recommends the insertion of a simple switch in wire #27 of the printer cable. This allows you to disable the linefeeds without going inside the printer each time.

You can control size and pitch of a printout with a simple format command. These commands vary for different printers, so be sure to use the correct one for your printer. You may vary your screen width from ten characters wide to 255 characters wide. Again, a simple command controls this. A saved file is marked with the screen width. If the screen widths do not agree when the file is loaded later, you will be informed and given a chance to change it.

You control printing in several ways. Hardcopy can be suppressed so you can review the text on the screen before printing. You can use single sheets; the program will wait while you insert a new sheet. For multiple copies, (up to 32,000) you insert a command in the print format line.

Hyphenation is possible. When the hyphenation command is in the format line, *CopyArt II* recognizes when part of a word will fit at the end of a line. When the copy is printed, the printing halts and allows you to insert the hyphen where necessary. This only works when jagged or full right justification is in use.

If you want something different or more formal for letters, *an Italic font is available.* (Some printers have this ability and some don't, so check before using.) The format command <CNTRL> <M> is embedded in the text at the point where you wish italics to begin and again at the end point. For those printers that support them, super-scripting and sub-scripting are possible. Again, the commands are embedded in the text.

CopyArt II makes it possible to print

columnar text. From two to six columns are available. The program calculates the number of characters per column automatically and, if desired, prints them right justified or with jagged justification. *One note of caution;* printing columns requires a large amount of work space on the disk in drive 1. Be sure you have enough space available or the printout will be aborted. The work file is automatically deleted from the disk when the printing run is finished.

The *CopyArt II* manual is very comprehensive. It covers all of the commands available in a fairly straightforward manner. It is written to be a hands-on manual and is divided into eleven sections, each of which covers a number of the commands and features of the program in detail. In addition, there are several appendices covering information on various printers and how certain commands are used for each one. The manual is helpful, but the best way to learn about *CopyArt II* is to use the program.

Some of *CopyArt II's* other features are Mailist, Mailmerge, Math, Sorting, Appending and Inserting files. With Mailist and Mailmerge you can maintain a mailing file on line and merge the fields of the file into your text. This is nice for writing a form letter which, when printed, appears to be personal for each individual.

CopyArt II has many more features too numerous to describe here. If you need a program that can function as a standard word processor and also want to mix graphics into the text, then *CopyArt II* is the one for you. I am more than happy with it and, after using it for several months, I am still discovering its features.

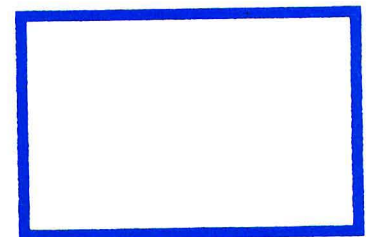
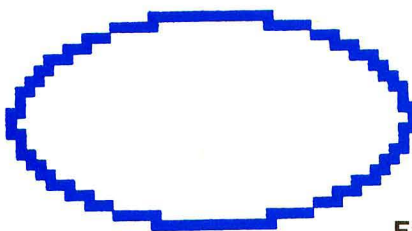


Figure 5

Radio Shack® MODEM II

Reviewed by Vik Gavande

Modems are wonderful devices that can connect you to electronic news or entertainment services across the nation by sending information over ordinary telephone lines. Most of them simply take information from your computer, transmit it over the phone line, and receive arriving information.

The *Radio Shack Direct Connect Modem II* (catalog number 26-1173) is a smart modem, and can do many things unattended, with proper software, such as dialing the phone, disconnecting, and then answering the phone. It operates at 300 baud, the most common communications speed. (Baud means bits of audio per second.)

The *Modem II* plugs directly into the phone line. If you have a modular jack, hook-up is easy — just plug the *Modem*

From Tandy Corporation, Fort Worth, TX 76102. Suggested retail price: \$249.00.

II cable into the phone jack. A phone may be plugged into the *Modem II*, as well, so you can hear what it is doing. If you do not have a phone jack, you'll need an adapter.

Modem II's Many Modes

The *Modem II* offers four modes: manual answer, manual originate, auto answer, and auto originate. When in the answer modes, the computer automatically accepts incoming calls. In the originate modes, the computer tries to connect with another computer or service. When it detects the carrier, it exchanges the logging-on protocols with the host computer.

Manual answer requires an operator and a connected phone. When the phone rings, you pick up the phone, and turn the *Modem II* on. If your timing is good, you will make a connection. For manual originate, you must dial the other computer's phone number and turn the

Modem II on at the right time. If your timing is off, no connection results.

In the auto answer mode, the *Modem II* automatically answers the phone after two rings. Auto originate is the *Modem II's* most powerful mode. The unattended computer can instruct the modem, by simple text strings, to dial the phone. This may be accomplished either by pulse (rotary) dialing, which all phone lines can accept, or fast tone (push-button) dialing. Not all phone lines can accept this. Other functions provided include: clear the *Modem II's* buffer, display current programming, fast rotary dialing, and pause while dialing. The *Modem II* can be disconnected from the phone line by sending a space disconnect for one and a half seconds.

Other Features

The two test functions are: local loopback and remote loopback. Local loopback tests the *Modem II's* circuitry, power supply, filters, and cables. The computer simply sends characters to the *Modem II*, and if the *Modem II* echoes them, it passes the test. Remote loopback detects line problems, and often is used to simulate another protocol, half-duplex operation.

The four switches on the *Modem II* consist of: power (on, off), mode #1 (auto, manual), mode #2 (originate, answer), and test (off, local loopback, remote loopback). Six LEDs show operating status. The first four indicate if the unit is on or off, if it is on hook or not, if the terminal is ready, and if a carrier signal (that shows a connection is



TRS-80®

made) is detected. Two other LEDs indicate when the *Modem II* is transmitting data, and when it is receiving data.

The manual does not include a table of contents, or an index, but each section is clearly labelled. It describes almost every stage of operation. One exception is the section on the auto-originate mode — I didn't figure out how the *Modem II* was supposed to be programmed until three or four days after I read the manual.

Some Drawbacks

I have detected three problems with the *Modem II*. A compatibility problem exists between terminal software for the popular *Hayes Smartmodem* and for the *Modem II*. Therefore, check before you buy to see whether the program you plan to use (if any) will work with the *Modem II*. Most will work with both.

The *Modem II* needs a built-in speaker. When you dial an attended phone, and don't make a connection immediately, you don't know whether the phone is busy, or if you reached a wrong number. With the *Modem II*, you must pick up an attached phone to find out, although the LED pattern may give you a clue.

The *Modem II* sometimes seems sluggish, since it takes six seconds after turn-on to ready itself for input, and there is a three second delay after disconnection while the *Modem II* prepares for input. After dialing a number that is busy, or one that doesn't answer, it takes 35 seconds to stop trying and return to Ready.

In four months of service, my *Modem II* has performed without a hitch. But at \$250, do you need the many features it offers? The manual gives an example: Suppose you own a business, and want to transfer sales receipts at night, when the charges are less, to a central computer. You know how to program in BASIC moderately well, and you can use this modem to save phone charges. On the other hand, if the only thing you plan to do is access CompuServe every other month, then you should consider the *Modem I* at a savings of \$100.

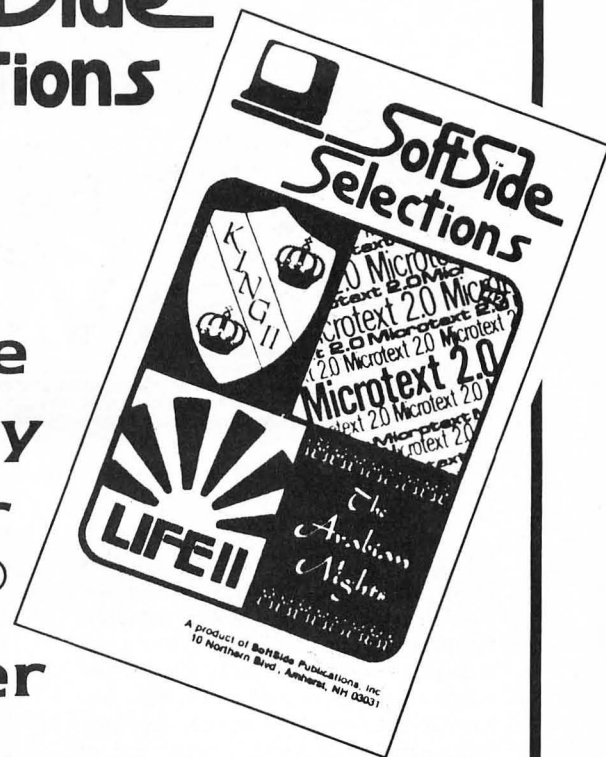
If you have no experience with telecommunications, if you do not already have a terminal program, and if a loan-shark won't have your knee-caps shot, I recommend the \$29.95 TRS-80 *Videotex* package (26-2220 for the Model I/III). It contains a basic terminal program, an hour of access on CompuServe, and an hour of access on the Dow Jones News Retrieval Service.

If, however, an honest assessment of its intended use reveals a need for the *Modem II's* sophistication, I recommend it highly.



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Everyman's Word Processor:

the volkswriter™

Reviewed by Steve Birchall

With a name like *Volkswriter*, a new word processor ought to be simple and basic, leaving out none of the essentials. For the most part, it is. Don't expect any radical innovations, because *Volkswriter* is not meant to be a *Porschwriter*. The human interface is in the currently fashionable style, with liberal use of prompt messages, help screens, function keys and an "undo" key (in case you change your mind). If you are familiar with any of the current word processors, you will feel at home on *Volkswriter*.

Easy to learn and easy to use, *Volkswriter* has enough capabilities to satisfy the needs of most home users and businesses. All the familiar features of word processing are available, such as inserting and deleting text, moving blocks, inserting blocks from previously established disk files, embedded commands, headers and footers, various styles of page numbering, and page formatting. Boilerplate sections, form letters and the like are all possible. Once you have learned how to operate the system, writing and editing with *VW* become second nature. If you can't remember a particular command, a Help key brings a summary to the screen to remind you — no need to flip through the manual.

Learning *VW*

Almost all the commands are activated through the function keys (ten

From Lifetree Software, Inc., 177 Webster, Suite 342, Monterey, CA 93940. System Requirements: IBM PC with one (preferably two) disk drives, 64K RAM, DOS 1.0 (DOS 1.1 preferred), eighty column monitor, and printer. Suggested retail price: \$195.00.

normal, plus ten alternate). The IBM's cursor movement keys, tab key, insert and delete keys, and screen scrolling keys complete the basic operating functions. To make learning quick and painless, a nicely-done tutorial is included on the disk, and the manual usually answers any remaining questions.

Because the Help screen is always available, you need to remember only two commands: F1, the Help key, calls up the summary for all the function keys, and Alt F10 returns you to the main menu without destroying any text. To begin entering text, select (E)dit and start typing. At this stage, the cursor keys, the Ins key (coupled with F8, which gets you out of insert mode and reformats to accommodate the changes) and the Del key take care of most needs.

Storing to disk requires F2, and a prompt asks for the filename you want to use. (The current filename is displayed in the Status Line at the bottom of the screen, along with the percentage of memory in use.) Logically enough, Alt F2 retrieves a file from disk. F3 inserts an extra blank line above the cursor. F4 deletes the word at the cursor, and Alt F4 deletes the rest of the line. Moving blocks of text is easy. Use F5 to mark the beginning of the passage; F6 to mark the end. Move the cursor to where you want it to reappear, and hit Alt F5 (or Alt F6 if you want to copy it at the new location without erasing the first occurrence). Find and replace are activated by F7 and Alt F7.

To set tabs and margins, select F9, and a line of dashes and crosses appears at the top of the screen. Move the cursor to the column where you want a tab stop, and enter a + to set a tab, or a dash to cancel one. Left and right margins are set by entering a / or a \. If

you forget these seldom used commands, *VW* provides prompts at the top of the screen.

Using *VW* is easy. The command structure requires only one or two keystrokes, and has a natural, logical feel. You can learn to use it in a short period of time, with no great effort — but you *will* need to spend some time learning it. Despite the Help key, all the on-screen prompts, and the tutorial, don't expect to sit down and immediately process a bunch of words. Nonetheless, *VW* is, for the present, a good balance between flexibility and ease of use.

Printout Problems

My most serious criticism of *Volkswriter* involves the Printer Setup. The tutorial does not cover this, and the manual is much too brief and ambiguous. Granted, it is flexible and adaptable to many different brands of printers, but Lifetree Software leaves the user in the dark about the actual choices available. A simple matter, such as putting page numbers at the bottom of the page, took two of us half an hour and yards of spoiled paper to puzzle out. The printing menu asks if you want page numbering, so we selected (Y)es. Presto: no page numbers. After a few failures with altering various parameters on this menu, we retreated to the manual. We found that an embedded command for either a header or footer would take care of this. Right there, in plain type in the middle of the page, it said, "The exact format of the commands is as follows: ..HEADnnXtext.." We had to do some digging to find out that nn was the line number on the page, not within the header or footer. Not giving this information where it's needed is sloppy, and violates the spirit of how *VW* works. When we printed it out, *VW* perversely

continued on page 58

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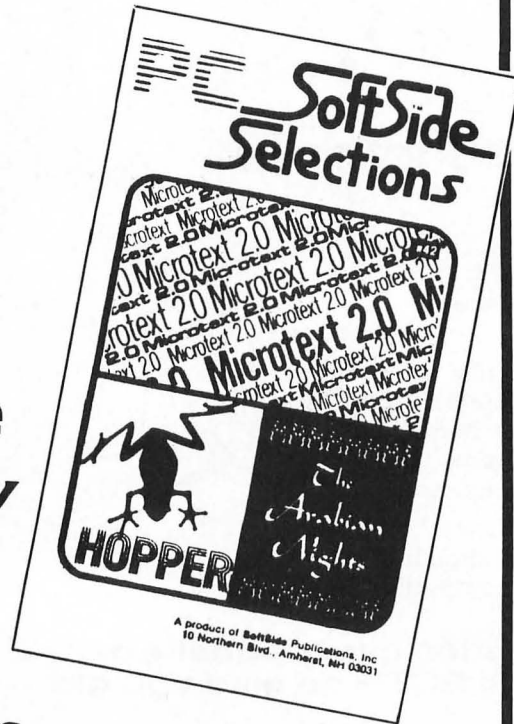
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IBM[®] PC

The Volkswriter, *continued*

printed "text" instead of page numbers. So...we deleted the word text, and *VW* refused to print a page number on the first page, but did put one on the second page.

Another problem is the way *VW* indicates document length. It tells you the percentage of memory in use, which is vague, but fine for many applications. At least you won't try to input too much text. However, a more concrete and useful way of presenting this information is to show the number of characters used and the remaining amount of memory.

Ergonomics

The array of twenty function keys is both a blessing and a curse. Most IBM software uses all or most of them, because that's what they were intended for. However, do you remember what Alt F4 does? Do you remember what key saves the file in memory to disk? Perhaps the problem is too many keys, or *names* for the keys which carry no particular meaning for the user. The problem compounds when your database uses different function keys for the same commands. To me this is user-grouchy. The arguments for simpler, mnemonically derived command structures are powerful. Would you rather use Control-L for Load or try to remember that Alt F2 activates this function?

If software designers for the PC would use fewer of the available function keys, learning would be easier. Giving these keys specific and consistent names for the operations common to all software would help. After that, a few (two or three) function keys for unique operations would be desirable — they would fulfill their intended use. A good approach to the human interface with the PC is restraint. Having twenty function keys available doesn't mean you have to use *all* of them. Simplicity and directness are more effective.

Top of the Stack

In defense of *VW*, it is by far the easiest of the IBM word processors to use. One Sunday afternoon, we experimented with a stack of them, and *VW* was the clear winner. After awhile, you do become familiar with the common commands, and the Help screens get you over the rough spots. With a little practice, you can become proficient, and *Volkswriter* will perform well for you.

THE WORDTM Plus

Reviewed by Fred Condo

Words, words, words! People are processing more and more of them with personal computers. If computers can process words, why can't they check them for spelling errors, too?

Enter *The Word Plus*, which checks the spelling in files made with any IBM PC word-processing program that creates standard PC-DOS files. If you have WordStar®, or another word processor that allows you to run other programs, you can use *The Word Plus* right from your word processor menu.

When you run *The Word Plus*, it requests the name of the file you want to check and lets you choose among any special dictionaries you have created. You also may select whether to mark words that change length as a result of a correction, and with which character to mark these words. Then, taking advantage of the PC's very rapid disk operation, *The Word Plus* quickly reads your file, and compiles a list of all unique words. Next, the program looks through its built-in dictionary, an enormous file said to contain up to 45,000 words. (A single-sided disk can accommodate only the 35,000-word version of the dictionary.) Because of the dictionary's size, this procedure takes a couple of minutes. Next, the program checks the update and special dictionaries (more on these in a moment).

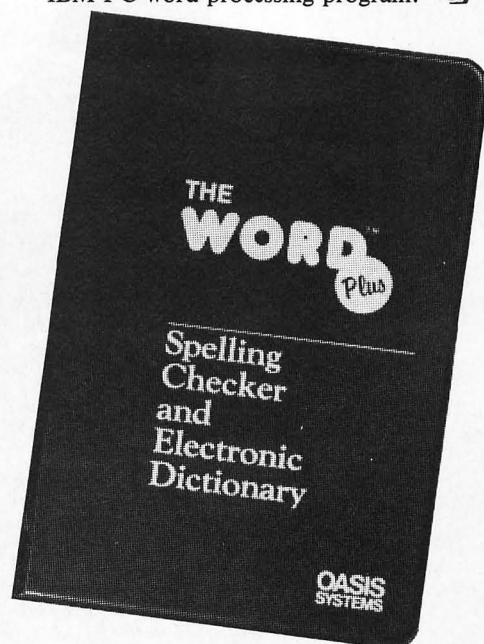
From Oasis Systems, 2765 Reynard Way, San Diego, CA 92103. System requirements: 64K IBM PC. Suggested retail price: \$150.

After these procedures, *The Word Plus* displays each word in your file not present in any of the dictionaries. You have several choices for each word. You may elect to ignore the word, which means its spelling is acceptable, but you don't want to make it part of the dictionary. Or, if the word is correctly spelled, you may want to make it a permanent part of the dictionary. There are two supplementary dictionaries: the update dictionary and the special dictionary. The program always checks the update dictionary as if it were part of the main dictionary; the special dictionary is read only when you specify its name. Because of this, you can create several special dictionaries, each for a specific type of writing. You can edit your update and special dictionaries with your word processor, adding many words at once or removing erroneously added words. You cannot edit the main dictionary, as it does not appear to be a standard file.

If the word in question is misspelled, or if you are unsure of its spelling, you can view its context or look up similar words in the dictionary. If *The Word Plus* finds similar words, you may choose one to replace the questionable word, or you may correct the word manually. In all cases, any changes you ask *The Word Plus* to make are added to your file. If the correction changes the length of the word, the program marks it with a character (normally "***") to remind you to reformat the paragraph in which the corrected word appears.

The Word Plus works quickly and reliably, and is easy to understand and

to use. Adding new words to the dictionary is a painless, automatic procedure, as is the process of checking a file. There appears to be one small bug in the program: it will not change the marking character from "***", even though this is supposed to be possible. But beware: like any automatic spelling checker, *The Word Plus* cannot tell whether you typed "piece" when you should have typed "peace." Be careful not to let the spelling checker lull you into poor proofreading habits. On the whole, however, *The Word Plus* is a fine, functional complement to any IBM PC word processing program. ☞



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HELLO HIDER

HELLO HIDER

by Paul R. Taylor

With prices these days, we all endeavor to conserve space on our disks. Even if you possess more disks than you need, you may be annoyed by the "DISK FULL" error message that sometimes appears in the middle of a long operation or when saving a lengthy program. You may find yourself searching frantically through all your files, DELETEing the less important ones to free more sectors. Which file usually is the first to go? Often it is the initialized file commonly named HELLO. What if that program did not occupy any of the 496 user-oriented sectors, but continued to exist on the disk, ready for use? It would save both headaches and money, allowing more space for serious programming. This is the principle purpose of this utility, "Hello Hider."

Manipulating this program is simple. First, initialize a disk with any program no longer than eleven sectors (which is more than enough in most cases). This is the program that will execute when the disk is booted (or when you type RUN). Make sure that program will never need

Hello Hider is an Applesoft® utility requiring one disk drive with DOS 3.3 and 32K RAM. When saved on disk the program occupies nine sectors.

to be changed, because it is permanent after you hide it. The second step is to run HELLO HIDER. Simply follow the directions, typing in the slot and drive values when requested. After a few seconds, you will see a catalog of the finished product. **Important:** Never UNLOCK this file. UNLOCKing will not destroy it, but RENAMEing, DELETEing, or re-SAVEing, which are only possible on an UNLOCKed file, may *devastate other files* on the disk. You need not worry whether the file is locked before hiding, since HELLO HIDER locks it as a part of the conversion process.

Disk Anatomy

Remember the layout of the diskette's storage areas? The overall structure looks like a pie with 35 concentric rings which you then cut into sixteen slices. When DOS 3.3 is used to initialize a disk, the read/write head moves back and forth across the spinning disk. The head stops at 35 different positions and writes formatting data so it can find that particular track again. While the read/write head hovers over a track, the sixteen sectors pass under it consecutively and continuously. Any given sector passes under the head about 60 times a second.

Each sector stores 256 bytes of information. Each byte contains eight bits, and is represented by an eight bit binary number from zero to 255, such as 10110001. A bit is a yes-or-no switch, represented as a one or zero, respectively. So we have 35 tracks, each with sixteen sectors, which contain 256 bytes each, and every byte has eight bits. Therefore a disk can store 1,146,880 yes-or-no bits.

Once a disk is formatted into its sectors and tracks, some useful information needs to be written immediately as part of the initialization process. DOS occupies the first three tracks (numbered 0, 1, and 2). This machine language program loads into memory when the disk is booted, which enables the computer to control the disk drive. The older DOS 3.2 used thirteen sectors per track. Two blank sectors were left over on the third track after saving DOS. These two sectors were insignificant, so no one ever bothered to use them. Later on, Apple increased the storage capacity, and upgraded to sixteen sector DOS 3.3. As a result, they had nine more unused sectors. You can work this out by multiplying the number of tracks DOS consumes (three) by the number of additional sectors per track ($16 - 13 = 3$). Add this number (nine) to the original number of blank sectors (two), and you have eleven

blank sectors left inactive by DOS.

After writing DOS on most of the first three tracks, your Apple develops the Disk Directory on track 17. This contains the vital information we see in a CATALOG, plus some things we do not see. File names, types, lengths, locks, and where the program is located on the disk are all in the disk directory.

Sector zero on track 17 is the Volume Table of Contents (VTOC). The most important feature of the VTOC is the Track Bit Map. The values recorded there indicate whether a given sector on the disk is available. This prevents accidental overwriting, because each sector is checked for vacancy before DOS places new data in it. Since a single bit indicates whether a sector is occupied (set to zero) or vacant (set to one), only two bytes (sixteen bits) are needed to indicate the vacancy of a whole track. This information is stored in the Track Bit Map which is part of the VTOC, found on sector zero of track 17.

The last event to occur in initializing a disk is saving the initialized program itself. This program is always saved first on track 18, starting at sector 15 and working back to sector zero. The maximum number of sectors the HELLO program may have is eleven, so we are concerned with sectors 15 to 5 of track 18, the eleven sectors that will be filled

up first. Coincidentally, sectors 15 to 5 of track 2 just happen to be the eleven sectors that DOS leaves blank. What HELLO HIDER does is simply transfer sectors 15 to 5 of track 18 to the respective sectors of track 2. But some other changes are necessary to facilitate this transfer.

The RWTS Shuffle

The binary subroutine that makes the program possible is called "Read or Write a Track and Sector." HELLO HIDER automatically POKES RWTS into memory using READ-DATA statements within the program, starting at memory location 768. You may use it at any time by POKeing it into memory — as this program does. To change any of its parameters, POKE new values into the appropriate locations as they are needed when you use RWTS (see tables below).

RWTS loads a specific track-sector from the disk into the storage buffer you specify. Our buffer occupies memory locations 8192 to 8447 (\$2000 to \$20FF Hex), but if you use HGR (High-resolution GRaphics page one) you may want to use locations 7936 to 8191 (\$1F00 to \$1FFF Hex) by POKeing location 785 with the value 31 instead of 32. Once the sector is loaded into the buffer, you can alter its contents by POKeing

new values into the buffer. Then you can save that sector wherever you please. In this way you may transfer a sector from one place to another on the disk, change a sector's contents, or do both at the same time.

The Hidden Greeting

To hide the HELLO program, HELLO HIDER begins by loading the Disk Directory's first sector (track 17, sector 15). The byte designating the location of the program's first sector (called the Track/Sector list) is changed from 18 to 2 by POKeing location 8203 with a 2. Next, it locks the HELLO file by adding 128 to the value at the buffer's location 8205 (File Type byte) if the value found there is less than 128. Finally, it zeroes the sector count by POKeing a zero into location 8236 of the buffer. RWTS saves all of these changes back on the same track 17, sector 15, simply by changing the command number at location 788 to a 2 ("write") and calling the RWTS subroutine (CALL 768).

The next changes involve the Volume Table Of Contents. This sector, located at track 17, sector zero, is loaded for one change. The Track Bit Map for track 18 must indicate that all sectors on that track are free. To do this, we set all bits to "1" for track 18's Track Bit Map, by

Hello Hider, continued on page 65

Table 1

Memory Location

Function

777 and 791	Slot number times sixteen
778 and 792	Drive number
779	Expected volume number (0 = any number is accepted)
780	Track number
781	Sector number
784	Low-order byte of data buffer starting address
785	High-order byte of data buffer starting address
788	Command: 1 = Read; 2 = Write
789	Error code returned after execution



Table 2

Error Codes

16 =	Disk write protected
32 =	Volume mismatch
64 =	Drive error
128 =	Read error
790 =	Volume number encountered

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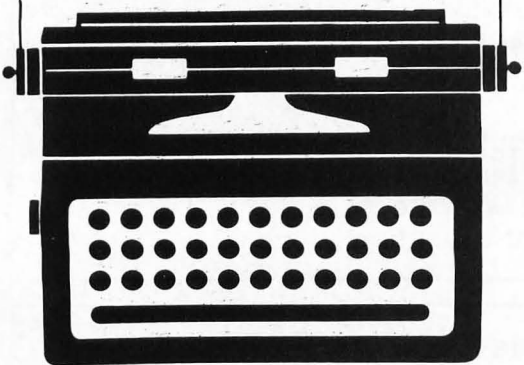


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Hello Hider, continued

POKEing locations 8320 and 8321 with the value 255 (11111111 binary). Then this change is saved back on track 17, sector zero.

Thirdly, we load the first sector of the program sectors, which is the Track/Sector List. This shows all the track/sector locations for the sectors containing actual files. The values in the list would be 18-14, 18-13,...18-5 for our HELLO program. If we change those 18's to 2's, the new list is 2-14, 2-13,...2-5, the new locations of our sectors. Now we save this sector at track 2, sector 15, where we already "told" the Disk Directory we would put it.

To complete the process, we transfer each sector of track 18 to track 2 where we "told" the Track/Sector List we would hide it. A loop does just that — from sector 14 to sector 5 (remember, we already transferred sector 15, our T/S List). This last set of transfers requires the read/write head to make ten trips back and forth from track 18 to track 2, which may make a swishing noise on the disk drive. One other note — even if your HELLO program is less than

eleven sectors, we still transfer all eleven sectors, even the blank ones.

Error Messages

Never overlook the possibility of an error occurring. Here are the error messages built into the program, the reasons they may occur, and how to find the cause:

- <I/O ERROR> : Disk not properly inserted; drive door open; disk uncertified or not initialized; wrong slot or drive selected. If the value in location 789 is 64 after calling RWTS, this error has occurred.
- <WRITE PROTECTED>: Write protect tab not removed or cut out properly. This error is found if the value in location 789 is 16 after calling RWTS.
- <PROGRAM TOO LARGE> : The HELLO program must be no longer than eleven sectors. This error message appears if the value of the program length (location 8236) from the Disk Directory exceeds eleven.
- <NOT FRESH INIT> : Disk not freshly initialized. This is checked for in two ways: 1. If the value in location 8238

is not zero, then a program is or was stored after the first file. 2. If the Track/Sector List marker (location 8203) is not set to 18, then the HELLO program has been deleted or re-saved.

The last 3 errors listed occur before any changes are made, but an input/output error may occur at any time. If it does, you may have to re-INITialize the disk, but this is not always the case. Check the disk being converted by booting it. If it boots and your HELLO program is still complete, don't worry about it. Any errors other than those listed above would be a result of typing errors in HELLO HIDER.

This will become one of your handiest utilities, and will give you more "elbow room" for your files. Here is a list of variables, memory references, and a documented list of the program. Refer to the DOS 3.3 manual, pages 94-98 and 127-135 for better understanding.

Variables

- D: Drive Number
- L: Loop Variable
- Q\$: Quotation mark [CHR\$(34)]
- S: Slot Number

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Hello Hider, continued

U\$: User Input
V: Value Storage

POKES, PEEKs, and CALLs

POKE 34: Top of Screen
CALL 768: RWTS Subroutine
POKE 777 and 791: Slot Number times 16
POKE 778 and 792: Drive Number
POKE 780: Track Number
POKE 781: Sector Number
POKE 788: Command (Read = 1, Write = 2)
PEEK(789): Error Encountered? — 16 = Write Protected; 64 = I/O Error
POKE or PEEK 8192 to 8447: Sector Buffer

```

SS SS SS SS SS SS SS SS SS SS SS
SS
SS Applesoft BASIC SS
SS 'Hello Hider' SS
SS Author: Paul R. Taylor SS
SS Copyright (c) 1983 SS
SS SoftSide Publications, Inc SS
SS SS
SS SS SS SS SS SS SS SS SS SS SS
    
```

Title.

```

10 TEXT : HOME : INVERSE : PRINT
   SPC( 3)"< HELLO HIDER - BY
   PAUL R TAYLOR >" SPC( 3);
Assign Q$ the quotation mark ("),
which cannot be printed directly.
20 NORMAL : PRINT :Q$ = CHR$( 3
  4)
30 PRINT SPC( 3)"THIS PROGRAM W
  ILL HIDE YOUR "Q$"HELLO"Q$
40 PRINT "PROGRAM ON SPECIAL SEC
  TORS NOT NORMALLY"
50 PRINT "USED BY THE DISK OPERA
  TING SYSTEM, WHICH";
60 PRINT "LEAVES ALL 496 SECTORS
  FOR YOUR USE.": PRINT
70 PRINT SPC( 3)"THESE ARE YOUR
  ONLY REQUIREMENTS.": PRINT

80 PRINT SPC( 5)"1. ONE 16-SECT
  OR DISK DRIVE WITH" SPC( 11)
  "D.O.S. VERSION 3.3,"
90 PRINT : PRINT SPC( 5)"2. A F
  RESHLY INITIALIZED DISK WITH
  "
100 PRINT SPC( 8)"A "Q$"HELLO"Q
  $" PROGRAM NO LONGER THAN" SPC(
  8)"11 SECTORS. (THE NAME DOE
  S NOT"
110 PRINT SPC( 8)"NEED TO BE "Q
  $"HELLO"Q$.": PRINT
120 PRINT SPC( 5)"3. ONCE HIDDE
  N, THE "Q$"HELLO"Q$" PROGRAM
  " SPC( 8)"MUST NEVER BE UNLD
  CKED.": PRINT

If user does not wish to use utility,
restore normal screen, and end ex-
ecution.
130 PRINT SPC( 3)"WOULD YOU LIK
  E TO USE THIS UTILITY ATTHIS
  TIME? (PRESS "Q$"Y"Q$" OR "
  Q$"N"Q$)": ";
140 GET U$: IF U$ = "N" THEN PRINT
  U$;: POKE 34,0: END

Get another keypress if the
response made no sense.
150 IF U$ < > "Y" THEN 140

Get slot number. Move the cursor on
"2".
160 PRINT U$: PRINT : PRINT "DIS
  K LOCATION: SLOT ? (1-7)":; HTAB
  21

If the slot number is invalid, get
another keypress.
170 GET U$: IF U$ < "1" OR U$ >
  "7" THEN 170
    
```

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Remember slot number, then print it over the "?", and then move the cursor to the next "?".

```
180 S = VAL (U$): PRINT S" ; DRI
    VE ? (1-2)";: HTAB 31
```

Get a valid drive number.

```
190 GET U$: IF U$ < "1" OR U$ >
    "2" THEN 190
```

Remember and display the drive number, protect the top twenty lines on the screen, and display the disk location on line twenty-one.

```
200 D = VAL (U$): PRINT D SPC( 7
    );: POKE 34,20: PRINT : PRINT
    : PRINT
```

Ask when user is ready; outline "RETURN" and "ESC".

```
210 PRINT "PRESS "; INVERSE : PRINT
    "RETURN";: NORMAL : PRINT "
    TO EXECUTE OR ";: INVERSE : PRINT
    "ESC";: NORMAL : PRINT " TO
    ABORT";
```

Get response. If ESC is pressed, clear the bottom of the screen, and go to line 130.

```
220 GET U$: IF U$ = CHR$( 27) THEN
    POKE 34,20: HOME : GOTO 130
```

If 'RETURN' was pressed, then continue, otherwise get another keypress:

```
230 IF U$ < > CHR$( 13) THEN 2
    20
```

```
240 POKE 34,21: HOME : PRINT : PRINT
    SPC( 11)"< NOW EXECUTING >"
```

Poke in the RWTS information.

```
250 FOR L = 768 TO 796: READ V: POKE
    L,V: NEXT L: RESTORE
```

```
260 DATA 169,3,160,8,32,217,3,96
    ,1,0,0,0,0,0,25,3,0,32,0,0,0
    ,0,0,0,0,0,1,239,216
```

Equivalent information in machine language (Hex):
Jump to RWTS:

```
$0300- A9 03          LDA -$03
$0302- AO 08          LDY -$08
$0304- 20 D9 03      JSR $03D9
$0307- 60            RTS
```

Information Table:

```
$0308- 01 00 00 00 00 00 19 03
$0310- 00 20 00 00 00 00 00 00
$0318- 00
```

Device Characteristics Table:
\$0319- 00 01 EF D9

```
270 POKE 777,S * 16: POKE 791,S *
    16: POKE 778,D: POKE 792,D
```

Read track 17, sector 15 (disk directory sector 1).

```
280 POKE 780,17: POKE 781,15: POKE
    788,1: CALL 768
```

Check for I/O error.

```
290 IF PEEK (789) = 64 THEN 510
```

Check if disk is not freshly initialized: program is or was after first file, or the Track/Sector List is not on track 18.

```
300 IF PEEK (8238) < > 0 OR PEEK
    (8203) < > 18 THEN 520
```

Check for program too long.

```
310 IF PEEK (8236) > 11 THEN 53
    0
```

Change track/sector list marker from track 18 to track 2; lock file if not already locked.

```
320 POKE 8203,2: IF PEEK (8205)
    < 128 THEN POKE 8205, PEEK
    (8205) + 128
```

Change sector count to 0 for CATALOG display; write changes on disk.

```
330 POKE 8236,0: POKE 788,2: CALL
    768
```

Check for I/O error.

```
340 IF PEEK (789) = 64 THEN 510
```

Check for write protect error.

```
350 IF PEEK (789) = 16 THEN 540
Read track 17, sector 0 (Volume
Table of Contents).
```

```
360 POKE 781,0: POKE 788,1: CALL
    768
```

Check for I/O error.

```
370 IF PEEK (789) = 64 THEN 510
```

Set all sectors on track 18 free; write changes on disk.

```
380 POKE 8320,255: POKE 8321,255
    : POKE 788,2: CALL 768
```

Check for I/O error.

```
390 IF PEEK (789) = 64 THEN 510
```

Read Track/Sector List from track 18, sector 15; check for I/O error.

```
400 POKE 780,18: POKE 781,15: POKE
    788,1: CALL 768: IF PEEK (7
    89) = 64 THEN 510
```

Change track references in list from 18 to 2.

```
410 FOR L = 8204 TO 8222 STEP 2:
    IF PEEK (L) = 18 THEN POKE
    L,2: NEXT L
```

Save changes to track 2, sector 15.

```
420 POKE 780,2: POKE 788,2: CALL
    768
```

Check for I/O error.

```
430 IF PEEK (789) = 64 THEN 510
```

Read all data sectors from track 18 sequentially from 14 to 5.

```
440 FOR L = 14 TO 5 STEP - 1: POKE
    780,18: POKE 781,L: POKE 788
    ,1: CALL 768
```

Check for I/O error.

```
450 IF PEEK (789) = 64 THEN 510
```

Save sector loaded in loop on track 2 instead of 18.

```
460 POKE 780,2: POKE 788,2: CALL
    768
```

Check for I/O error.

```
470 IF PEEK (789) = 64 THEN 510
```

Move next sector.

```
480 NEXT L
```

Clear all screen except top heading; display CATALOG.

```
490 POKE 34,2: HOME : PRINT : PRINT
    CHR$( 4)"CATALOG,D"D",S"S
```

Indicate completion; return screen to normal; END.

```
500 PRINT : PRINT "ALL FINISHED!
    ": POKE 34,0: END
```

Error handling routines; CHR\$(7) is the bell character.

```
510 HOME : PRINT : PRINT CHR$(
    7)"< I/O ERROR >": GOTO 210
```

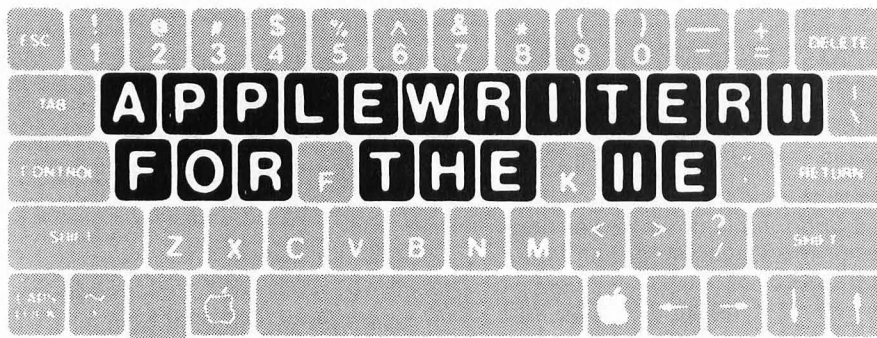
```
520 HOME : PRINT : PRINT CHR$(
    7)"< NOT FRESH INIT >": GOTO
    210
```

```
530 HOME : PRINT : PRINT CHR$(
    7)"< PROGRAM TOO LARGE >": GOTO
    210
```

```
540 HOME : PRINT : PRINT CHR$(
    7)"< WRITE PROTECTED >": GOTO
    210
```



LINES	SWAT CODE	LENGTH
10 - 100	HC	509
110 - 210	SB	505
220 - 330	LC	404
340 - 450	AD	321
460 - 540	KJ	272



Reviewed by Fred Condo

Word processing is probably the foremost task to which microcomputers are applied. To a lot of people all over the world, a \$2000 micro with a word processor program makes much more sense than a \$10,000 dedicated word processor that can't do anything else.

The original *Apple Writer* appeared a long time ago, and now, there's a version especially for the IIe. The words you are reading came into being through the auspices of *Apple Writer IIe*.

Changes and Updates

To those familiar with *Apple Writer*, little about the IIe version will be strange. The nicest change is that the cursor is now a flashing box that lies on top of characters. Older versions of *Apple Writer* had an annoying cursor that went *between* characters, stretching words it passed through, generally perplexing the user. The new cursor, reasonable and unobtrusive, is a major improvement.

Other differences take advantage of the IIe's special features, notably the four cursor movement keys, the two function keys (open- and closed-apple), the Delete key, a full upper and lower case character set, with a working shift key, and the 80-column display card. The arrow keys move the cursor one character to the left or right and one line up or down. The closed-apple key makes the arrow keys move the cursor word by word left or right and a half-screen (12 lines) up or down. The cursor's movement is a bit odd when it moves up and down. For instance, it does not like to stay on the leftmost column of the display, and it does not remember its horizontal position when a carriage

From Apple® Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014. System requirements: Apple IIe, one disk drive, and a printer. Suggested retail price: \$195.00.

return pulls it to the left. These quirks are only mildly annoying, however.

The open-apple key, when pressed with the ? key, brings up the help menu (the program disk must be in drive 1). The help screen command summaries are a useful supplement to the manual. Finding something on the help screen is much easier than looking it up. The open-apple key is also used, with the arrow and other control keys, to move or copy words or blocks of text.

The Delete key was not present on older Apples. It functions as a destructive backspace. When you delete something in *Apple Writer*, it gets stored in a special area of memory from which you can later retrieve it in various ways. If you just want to delete a character forever, use the delete key. This is a very convenient key, and I use it all the time (as I am *not* a skilled typist). The only drawback is that I sometimes hit the Delete key when using Applesoft, which does not understand this key. As a word processing key, though, it's a gem.

The 80-column display card is technically an option, though I suspect *very* few people will choose not to get it, particularly since it is part of the Apple IIe introductory package. Nonetheless, *Apple Writer* automatically detects the presence or absence of the card, and works perfectly either way.

Commands

Most commands are mnemonic control characters: control-S for save, control-L for load, and control-F for find and replace. Some, like control-O for DOS commands, are not mnemonic, but these are few. All the commands require you to remember only one key. After that, a prompt or menu helps you remember what else you need to type. This makes *Apple Writer* easier for computer neophytes to use than other popular word processors.

Formatting commands are mostly "dot commands," that is, they consist of lines, prefaced by a period ("dot"),

in the text itself. These do many things, from making the Apple beep, to controlling the margins, centering, indentation, and so on. This powerful set of commands is explained fully in the manual. Many dot commands are duplicated on the print menu; some appear only on menus. The most notable of these is the PD (Print Destination) command on the print menu. This specifies the slot in which your printer interface is installed, but it also allows you to preview your document on the screen before printing, or save the formatted text to a disk file. The preview feature is a powerful argument for not omitting the 80-column card.

Display

Apple Writer's display consists of a "data line" at the top, a screenful of text, and, sometimes, a prompt area at the bottom. When you issue a command, the bottom three lines of the screen vanish, and a prompt appears. At other times, a menu completely replaces the screen.

The data line displays the "direction arrow" (which controls the direction *Apple Writer* looks during find and replace operations), the available memory, the length of your document, the cursor's position in the document, and the cursor's distance from the last carriage return. If you have loaded or saved your document, its file name also appears there.

Pressing the ESC key displays the tab stops on the data line. Pressing ESC again turns the data line completely off, and another ESC brings the original data line back on. This function also appears on a menu familiar to those who have used older versions of *Apple Writer*.

Like all word processors, *Apple Writer* breaks up lines at spaces, but you can control whether this feature is active or not with a single keystroke. This is useful if you are editing something other than human language, a computer program or a chart, for example.

By splitting the display, you can edit one portion of your text while another remains undisturbed. This is particularly useful when you are moving pieces of text around.

Programmability

I typed the words "*Apple Writer*" only once while writing this review. That was when I defined a "glossary" for this project. Whenever I wanted to type "*Apple Writer*," I simply pressed open-apple and "a" together. This is not a new feature, but the function key makes

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it much simpler. For those who are used to the two-keystroke glossary access of older versions, that method still works. The program disk contains a pre-prepared glossary to perform various *Apple Writer* functions, as well as to control the Apple Letter Quality and Dot Matrix Printers. You can modify this glossary, or start from scratch, and you can store a number of glossaries on disk. This is *Apple Writer's* simplest form of programmability, but it is probably the one you will use most.

Apple Writer also has WPL, the Word Processing Language. This is an actual, albeit simple, programming language, like BASIC. You can use it to do all manner of things, most notably, form letters. WPL is explained in a separate, tutorial-style manual as big as the manual that documents *Apple Writer*. If you are intimidated by the thought of having to program your word processor, Apple thoughtfully has provided various sample programs on the program disk. You will be able to make good use of some of them without any modifications. In all, the complexity introduced by WPL is outweighed by the flexibility it provides.

Manuals

The *Apple Writer* and WPL manuals maintain Apple's reputation for excellent documentation. Both are in tutorial style, and contain copious examples. Like the manuals for the IIe itself, the margins contain notes and cross-references to other pages and other manuals. The *Apple Writer* and WPL manuals each have a complete index, and the WPL manual even has a complete example showing how to write and debug a program.

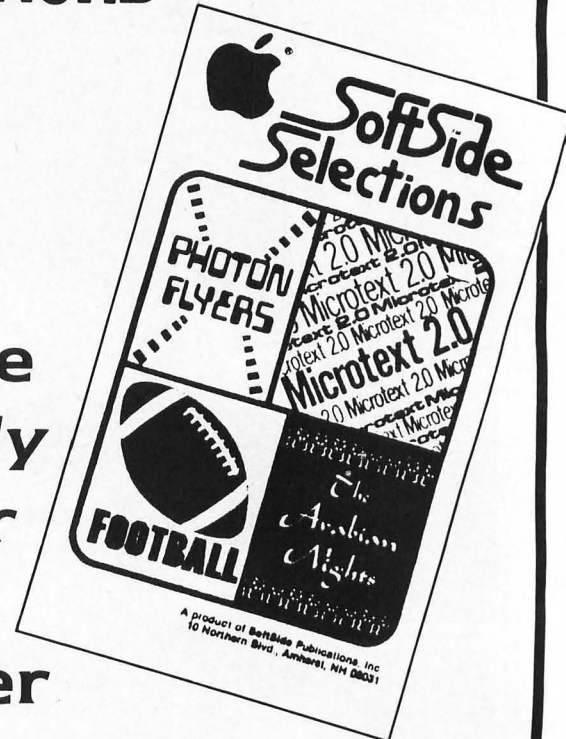
These two manuals are the best I have seen for any Apple word processor, and definitely enhance the usefulness of the program, particularly for the computer novice. Notably absent are typographical and factual errors, which mar some competing word processors' manuals. As for the program itself, it seems to be completely bug-free.

In Conclusion

Apple Writer for the IIe is the first word processor available that takes advantage of the new machine's abilities. If you are going to buy an Apple for demanding word processing tasks, you definitely should consider *Apple Writer*. One note of caution: be sure you haggle — it pays. I bought my copy of *Apple Writer* at a \$30 discount, even though I bought my IIe two days after it was introduced. ☺

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Bound into the center of this issue, you'll find **SoftSide Selections**, the handy, pull-out booklet with program listings for your computer. If you bought your copy of **SoftSide** at a newsstand, your booklet contains this issue's Front Runner, **Microtext 2.0**, a BASIC word processor for the Apple®, IBM® PC, Atari®, and TRS-80®.

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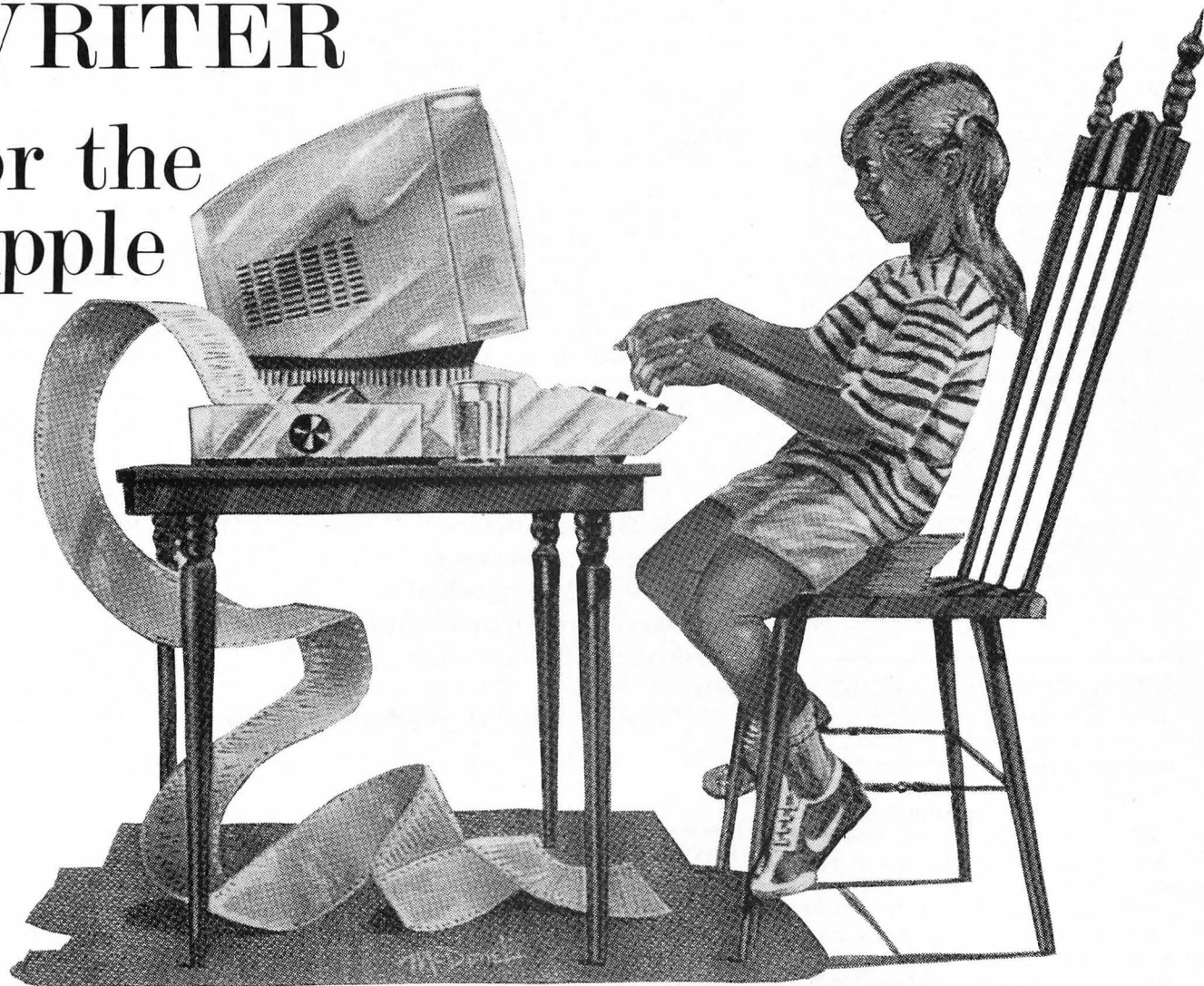


To order your copy of this issue's Disk Version, or to subscribe to **SoftSide** DV, see the bind-in cards opposite page 56.

Bank Street WRITER

Reviewed by Jon R. Voskuil

for the Apple



What (you might ask) is a “family word processor?” Is it handed down, like your great-aunt Millie’s brownie recipe, from generation to generation? Is it, like the family fare at the local theater, hesitant to accept four-letter words and double-entendres? Or, like the other kind of family fare — at the local diner — is it of doubtful origin and prone to giving indigestion?

Bank Street Writer is none of these things. Actually, “family word processor” is not exactly the phrase Broderbund Software uses to promote their new product. They call it “the home

word processor” and “the first word processor for the entire family.” Whatever phrase you use, Broderbund’s approach to selling *Bank Street Writer* is unique.

Dozens of word processors already are available for the Apple II. The uniqueness of *Bank Street Writer* is its promotion not as a word processor with every conceivable feature, but as one almost anyone can use with minimal practice.

The *Bank Street Writer* ads show a grade school girl with fingers flying over the Apple’s keys, and yards of paper snaking out of the printer, while her proud parents look on. The very name of the product emphasizes its genesis and testing in an educational environment (Bank Street College of Education). This approach is quite different from the professional, business-

oriented image of most other word processors.

In evaluating *Bank Street Writer*, bear in mind not only its features, but how well those features fit the needs of its intended users.

Hi-Res Characters

Bank Street Writer displays lowercase as well as uppercase without added hardware. Characters are the usual Apple size, clearly readable on a normal TV screen. Since characters are generated on the hi-res screen, the display is sometimes a bit slow when scrolling. However, you can keep typing and lose no characters. The display breaks lines between words, so you press RETURN only at the end of a paragraph.

continued on page 72

From Broderbund Software, 1938 Fourth St., San Rafael, CA 94901. System requirements: Apple II with Applesoft, 48K RAM, and DOS 3.3. Suggested retail price: \$69.95.

Bank Street Writer *continued*

Bank Street Writer overcomes the Apple's shift key limitation by recognizing either a keyboard enhancer card or the standard single-wire shift key modification. If you have neither of these, you must press shift-N once to capitalize a single letter, twice for shift lock, and once again to release the lock.

Since *Bank Street Writer* uses the hires screen for text display, it can display horizontal and vertical lines and special symbols. Thus, a rectangle neatly outlines the eighteen-line writing page, separating it from the prompt lines at the top of the screen. Special characters include left and right arrows, an I-J-K-M cursor-movement diamond, and formatting symbols for centering and indenting. These extra lines and symbols make the screen neater and key functions clearer.

You enter text in an insertion mode, either at the end or in the middle of existing text. To change existing text, you insert the new and erase the old. You can erase characters in either direction from the cursor using the right and left arrows. This feels very natural once you get used to it.

Blocks, Disks and Printing

Pressing ESC toggles between the text entry mode and a cursor movement and command mode. In this latter mode, you can search for strings of text, replace them with other strings, erase or move blocks of text, and access a Transfer menu for disk and printer operations.

You indicate a block of text to be moved or erased by placing the cursor at the beginning of the block and then moving it toward the end of the block. As you do so, the display changes to inverse, making it easy to see what effect the operation will have. The program always asks you to confirm such a change before executing it.

An elegant feature is the ability to undo the last move or erasure of a block of text. This can be a lifesaver at times, and gives you the ability to see the text both ways if you're unsure of a rearrangement or deletion.

Another potential lifesaver is effective trapping of the RESET key. Pressing RESET (or ctrl-RESET) does not crash the program. In fact, nothing seems to crash the program.

All necessary disk operations are available through the Transfer menu. These include saving or retrieving a file on disk, renaming or deleting a saved file, and initializing a new text disk. You can assign disk files passwords for

privacy. A disk catalog is available during all of these operations.

Text disks are compatible with normal Apple DOS 3.3. Files are saved in binary format, convertible to standard text files with an included utility program. The same utility can convert standard text files to *Bank Street's* binary format.

In addition to disk operations, the Transfer menu also enables you to print a draft or final version of your document. You set some printout options (left, top, and bottom margins, and lines per page) through the separate utility program. You choose all other print options at printout time. These include line length and spacing, page numbering and headings, printing a partial file, and printing a file on the heels of the previous one.

Bank Street Writer is simple to learn and use, crash-proof, highly idiot-proof, and adequate for almost every kind of home word processing task.

Easy Does It

Bank Street Writer is a friendly program. The prompt lines display most of the available options, so you must remember only a few simple commands. These are "U" and "D" to move up or down twelve lines, "B" and "E" to move to the beginning or end of the text, CTRL-S to see how much space is left in memory, CTRL-I to indent, and CTRL-C to center a line.

The program makes good, logical use of the ESC key to move between menus, and to back out of operations when you make a mistake or change your mind. It also uses the arrow keys, space bar, and RETURN key logically to select among the options presented on the prompt lines.

The 28 page manual is excellent: clearly written, logically ordered, and complete. Not only that, but on the flip side of each of the two identical program disks is a tutorial. This thoughtful addition to the package is an excellent introduction to the word processor, leading you through exercises that teach all the basic functions.

Minor Limitations

- You cannot justify the right margin of a printout.
- The lack of a provision for embedding printer control commands into the text eliminates underlining, boldfacing, superscripting, and other such niceties.
- You cannot set tab stops within the text. This makes setting up multiple columns of information a little more time-consuming.
- The size of the document in memory is limited to about 1300 words with a 48K Apple, or 3200 words if you add a 16K RAM card (this review is about 1500 words).
- One- or two-keystroke commands for deleting words, lines, or sentences are missing. However, deleting character by character, using the REPT key, is acceptably fast for up to several lines, and block erasing is available for longer sections.
- A block of text to be moved or erased can be no more than fifteen lines long. However, you can save any portion of a file to disk, providing a way to manipulate larger blocks with a bit of additional effort.
- The text highlighting for block moving or erasing should be a little faster. It seems sluggish at times, especially when working near the end of a long document.
- The program disk is not copyable.

I find these quite reasonable considering its intended audience and its price, but you should be aware of them before you decide whether to make this your home word processor.

Bank Street Writer has at least one outright fault. Most disk operations cause the read/write head to "bottom out" at Track 0, producing the grating *brraak* you always hear when initializing a disk. In fact, this happens *twice* when saving an updated copy of an existing file. This assault on the ears discourages frequent saving of your text — a very undesirable consequence.

In spite of this one complaint, however, *Bank Street Writer* is in the running for my favorite general purpose word processor. It's simple to learn and use, crash-proof, highly idiot-proof, and adequate for almost every kind of home word processing task. It includes the right features, and most home users won't miss the features omitted for simplicity's sake.

In short, you no longer should associate Broderbund's name exclusively with games. You should also associate it with a very capable, inexpensive word processor for the entire family. ☐

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Hints

& Enhancements

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TRS-80 Random Access Database

By changing line 4500 of *Random Access Database* (*SoftSide*, April 1982 and *The Best of SoftSide*) as shown below, the field width will appear graphically on the screen as a series of dots. This modification saves the user from having to count the number of characters he has entered. When the last dot vanishes under the cursor, the field is full.

```
4500 PRINT#(J);"  "STRING$(B%(J)+1, ".");STRING$(B%(J)+2, 24);:I
NPUTTI$(J)
```

Fred Condo
Milford, NH

Atari Space Mines

After typing in *Space Mines* (Issue 38), I found that using the keyboard was tiresome. Half the time that I was playing, I forgot to press a key to stop my ship. The following changes will modify the program for joystick control:

```
Change line 200 to read "D=STICK(0)"
Change the first part of line 220 to "IF
D=14"
Change the first part of line 230 to "If
D=13"
```

Matthew Morris
Lake City, FL

HOTLINE

Every Wednesday, from 7PM to 9PM Eastern Daylight Time, the **SoftSide** programmers will answer your questions about **SoftSide** programs. Call (603) 673-0585.

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2. Be specific. It betters our chance to zero in on your problem quickly. The first thing we'll want to know is what program you're inquiring about and what computer you're using.
3. Be brief. There are 50,000 of you and five programmers...
4. Before calling, **SWAT** the program, if we published a **SWAT** table with it. Most "bugs" are hidden typos. **SWAT** will find them and may save you a call.

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(Programmers will be available to answer questions only during **Hotline** hours. Please don't call at any other time with your software questions.)

Bugs, Worms, and Other Undesirables



Apple Personal Finance — Checking

A quote was omitted near the end of line 980 of *Checking* (*SoftSide* Issue 37). This caused the line to be overlooked during renumbering. The corrected portion is shown below.

```
...PRINT "INITIALIZED": GOSUB 1140:
GOTO 300
```

This correction changes one SWAT code. The correct code is shown below.



LINES	SWAT CODE	LENGTH
970-1020	VV	565

Apple Blackjack

The short loader program described in the program notes for *Blackjack* (Issue 37) erroneously uses the file names SOLITAIRE.SHAPES and SOLITAIRE.PGM. If you use this short loader, change the names to BLACKJACK.SHAPES and BLACKJACK.PMG.

IBM PC Blues Box Part II

There is a bug in three lines of *PC Blues Box Part II*, which occurs only in PCs equipped with more than 64K RAM. In

lines 17100, 22030, and 25040, change "X=FRE(A\$)" to "X!=FRE(A\$)". With these changes, the program will run properly in any size PC.

TRS-80 Hopper

This, believe it or not, corrects the correction published in Issue 37 for the TRS-80 version of *Hopper* (Issue 35). The closing lines of *Hopper* should read as follows (this time they really are the right ones):

```
60120 DATA35,205,55,35,43,229,205,127,10
,42,33,65,58,-167,60
60130 DATA183,87,24,4,24,48,24,44,66,62,
1,211,255,16,252,66,62
60140 DATA2,211,255,16,252,58,64,56,230,
4,32,7,124,181,40,3,43
60150 DATA24,228,175,50,154,64,225,209,1
93,215,195,30,29,83,79
60160 DATA85,78,68,209,225,241
```

Applesoft Extensions 2

There is a bug in the &INPUT feature of *Applesoft Extensions 2* (Issue 37). This bug occurs when you use the S parameter, which reads the shift-key modification. The capital letters M, N, and P, cannot be entered. The following program will correct the bug. Enter the program, SWAT it, and run it with your *Applesoft Extensions 2* disk in the drive.

Note that this program will automatically determine whether your copy of *Applesoft Extensions 2* requires the patch published in Issue 39, and performs it if necessary. It is imperative that you *not* run the patch from

Issue 39 once you have performed the patch presented here.

```
10 D$ = CHR$(4): PRINT D$"BLOAD
AE2.OBJ,A#1A00": IF PEEK (
8640) = 172 THEN 30
20 FOR X = 8701 TO 8642 STEP -
1: POKE X + 1, PEEK (X): NEXT
X: POKE 8640,172: POKE 8641,
255: POKE 8642,2: POKE 8446,
208: POKE 8454,205: POKE 846
5,206
30 PRINT D$"UNLOCK AE2.OBJ": PRINT
D$"BSAVE AE2.OBJ,A#1A00,L#80
0": PRINT D$"LOCK AE2.OBJ"
40 PRINT D$"BLOAD AE2.LDR": POKE
856,136: POKE 862,18
50 PRINT D$"BLOAD AE2.LDR": POKE
856,136: POKE 862,18
60 PRINT D$"UNLOCK AE2.LDR": PRINT
D$"BSAVE AE2.LDR,A#300,L#CC"
: PRINT D$"LOCK AE2.LDR": POKE
6656,0
```




Modified parameters: NU=2, B=500

LINES	SWAT CODE	LENGTH
10 - 20	GR	145
30 - 40	DK	114
50 - 60	XU	120


	A	B	C	
(1)	1	3	8	(1)
(2)	2	4	12	(2)
(3)	3	5	16	(3)
(4)	4	6		(4)
(5)	7.7			(5)
(6)	-6.9			(6)
B = A - 2				
C = (A + B)²				
CLEAR A		CLEAR B		CLEAR C
COMPUTE	CLEAR ALL		STOP	

Making Math Fun

 *KID CALC* is a VISI-clone for kids, intended to make arithmetic child's play. It allows children to play with numbers to see if they can beat the computer in long and complicated calculations. Using the arrow keys, the child moves the cursor around the screen, enters numbers where he/she wishes, and performs computations. The program handles positive and negative numbers with or without decimal points.

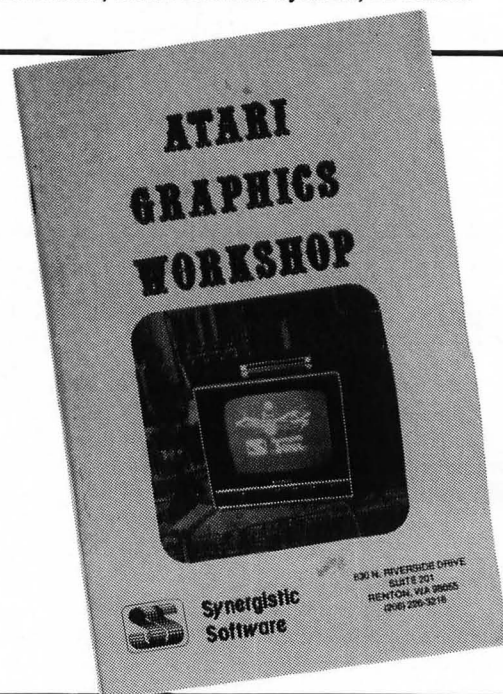
KID CALC is available for the TRS-80® Model III with 48K and a disk drive for \$39.95. For more information, contact E. David & Associates, Small Business Systems, 22 Russet Lane, Storrs, CT 06268.

New Graphics Utilities Packages Announced


 *The Graphics Workshop* helps programmers take full advantage of the Atari® 400/800 graphics capabilities. Included in the package are a Player-Missile device handler which allows easy set-up and execution of Player-Missiles using Atari BASIC OPEN, PRINT and PUT commands. A Graphics Enhancements section includes a new graphics mode and bit map capabilities.

The Graphics Workshop also includes three graphics editors: a Player-Missile editor, a bit map editor, and a character editor. The package includes sample program listings and detailed instructions on how to utilize the three editors fully.

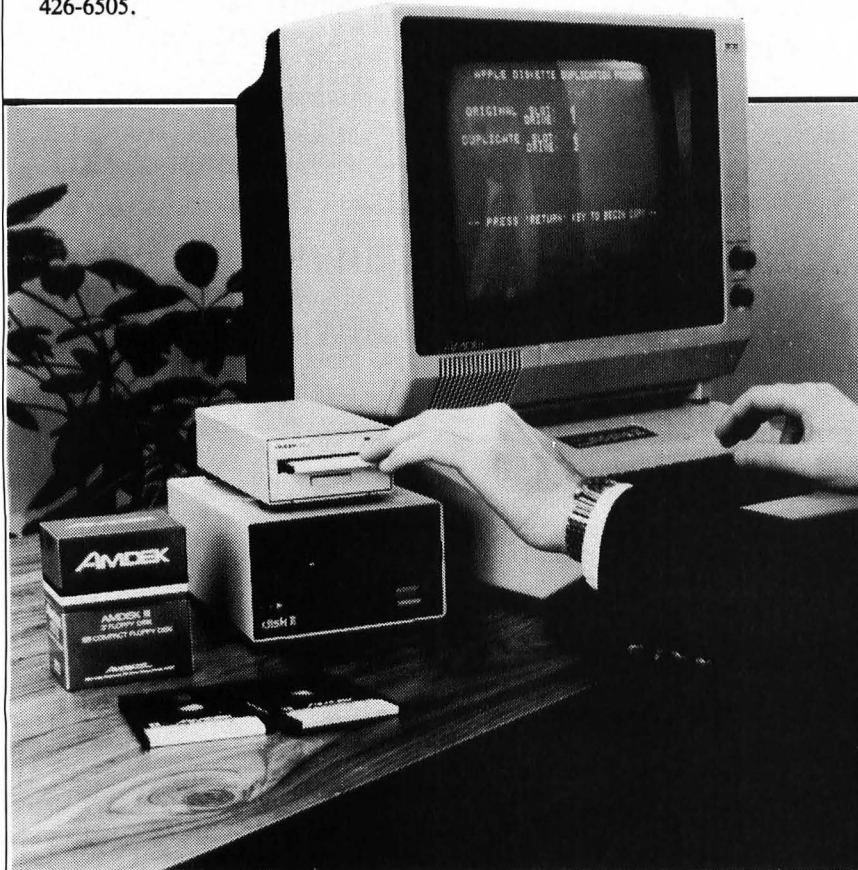
The Graphics Workshop requires an Atari 400/800 with 48K and one disk drive. Its cost is \$39.95. For more information, contact Synergistic Software at 830 N. Riverside Dr., Suite 201, Renton, WA 98055. To place a toll free order, call (800) 426-6505.



Good Drives Come In Small Packages

 The new *AMDISK-1*, a compact three inch micro-floppydisk drive system, has up to 286 KBytes of formatted storage capacity. The recording format, data transfer rate and disk rotation speed are compatible with Apple® II standard 5 1/4 inch disk drives. The "shirt pocket" sized three inch micro-floppydisk cartridges feature a hard plastic case and hinged cover for thorough media protection, plus a "write protect" mechanism.

AMDISK-1 has a suggested retail price of \$299. For further information, contact: Amdek Corporation, 2201 Lively Blvd., Elk Grove Village, IL 60007 (312) 364-1180.




Protect Your Software

Attention, Programmers! A new sourcebook on computer law is now available. *Legal Care For Your Software*, by Attorney Daniel Remer, explains how you can protect your software through copyright, trade secret, patents, trademark, non-disclosure agreements, as well as electronic copy protection. Standard contract forms are also included. For those who've already fallen victim to software piracy, the book explains how to handle your legal problems, with or without an attorney.

The book's author, Daniel Remer, is legal counsel for several software companies, and contributes articles to many trade magazines.

Legal Care For Your Software is available for \$19.95 at a bookstore in your area, or directly from Nolo Press, 950 Parker St., Berkeley, CA 94710 (415) 549-1976.

Disk Labels Deluxe

 *Diskette Manager* is a library program for disk management with a unique label printing capability. With it, you can print labels containing the disk name, file names, up to eight lines of comments, and the storage status of each disk. Using the graphics capabilities of the IBM® PC and EPSON dot matrix printers, you can print 64 file names on one standard four inch × 1 7/16 inch label. A catalog file containing disk names, file names, file sizes, creation date/time and comments is updated as disks are labelled.

Diskette Manager requires an IBM PC with 64K memory, an 80 character display, two disk drives to utilize all its features, and a dot matrix printer, either current production IBM or an EPSON with Graftrax Plus. It is available, for \$50, from Lassen Software, Inc., P.O. Box 1190, Chico, CA 95927 (916)891-6957.

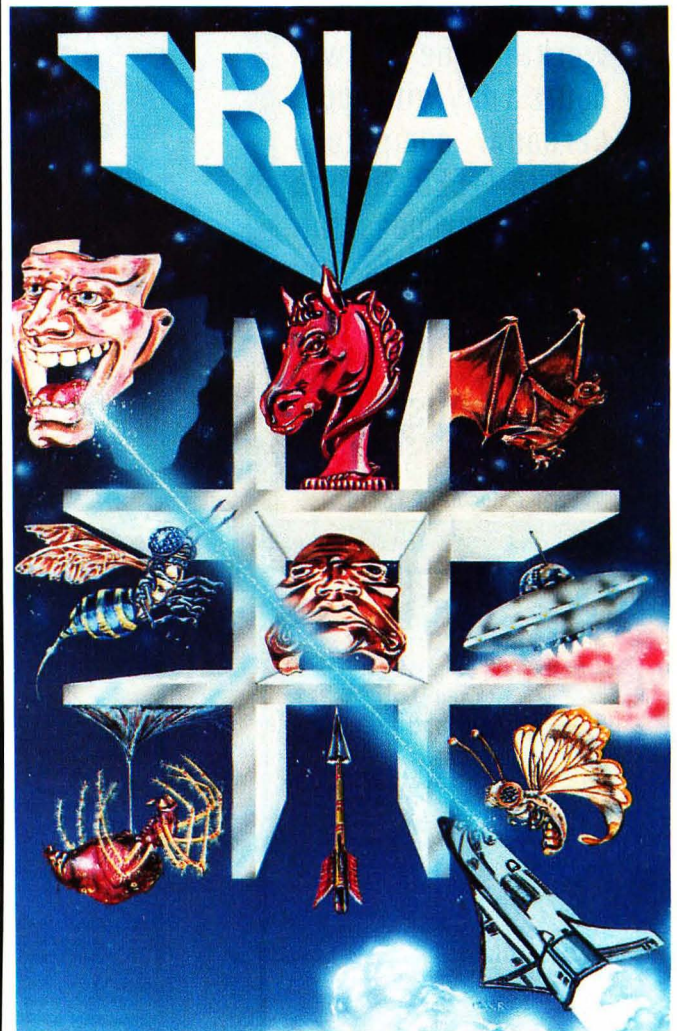
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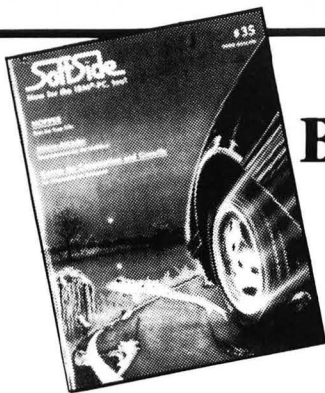
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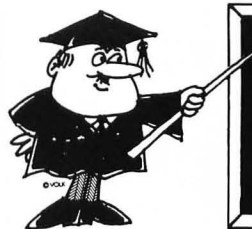
Back Issue of the Month: Issue #35

This time, *SoftSide's* featured back issue is Issue 35. This was the Arcade Issue. The Front Runner for Issue 35 was *Hopper*, which gave users of the Apple®, Atari®, and TRS-80® the opportunity to guide a little frog through the nastiness of his highway environment.

SoftSide's second issue to offer programs for the IBM® PC, Issue 35 gives users of the PC *SWAT*, the official debugging utility, and *PC Blues Box II*, modifications and enhancements to the music processor. Apple®/Side features *Blockade*, a game of strategy and arcade skills, and the DV enhancement is *Sub Hunt*. For the TRS-80, Issue 35 offers *Fireman*, and the DV features *Ping-Pong/Hockey*, two machine-language arcade games in one. Atari/Side wraps up the Sides with *Saucer Formation*. The Atari DV enhancement is much more than a mere game — *Deadstick Landing* is a complete simulation of a flight of America's Space Shuttle.

Plus, you can explore the *Atari Frontier*, put a big button on your Apple paddles, learn about *Entertainment Tomorrow*, and enjoy the usual abundance of reviews, columns, and articles. (For ordering information, see page 24.)

COMING NEXT ISSUE: *SoftSide Issue #42*



EDUCATION WITH MICROCOMPUTERS.

How are computers used in teaching? Should we use them at all? What are the best ways to teach with micros? How can we stimulate the ability to think and reason through computers? These and other questions are the theme for *SoftSide's* special issue on education.

Guest Editor Peter Favaro explores the philosophy of computer-assisted teaching with **Taught to the Tune of a Silicon Chip**. Favaro offers unique insights into the problems of designing educational software.

Saul Bernstein sums up his lively teaching career with a commentary on the state of American education past and present and speculates on its future.

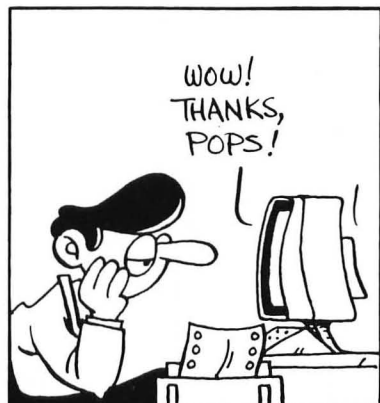
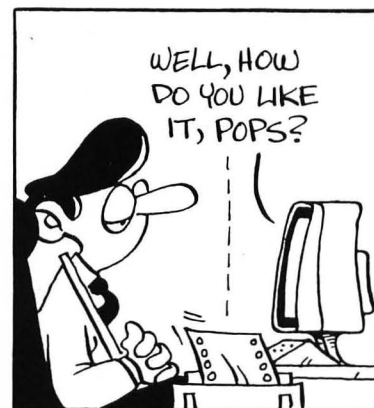
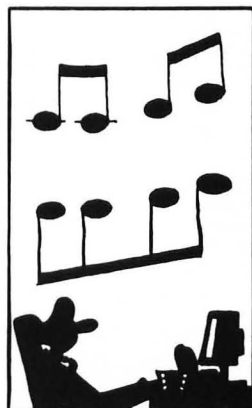
What happens when you teach adults how to use software? **Ame Flynn** clears up the confusion and shows how to transfer skills from manual methods to the computer.

Relax, Issue #43's Front Runner, gently mellows you out with a series of exercises to relieve muscular tension. Peter Favaro also includes deep breathing exercises, and ocean sounds to help you float off to sleep.

PLUS — The classroom of the future, *Calc/Side*, *Financial Operating System*, reviews and more.

MACHINE HEAD MACHINE HEAD

BY SAUCEA BY SAUCEA



HAVE YOU FLOWN YOUR ATARI TODAY?

FINAL FLIGHT!

Imagine yourself at the controls of a small, single-engine plane, 10,000 feet in the air, on your approach to the runway and safety. You're running low on fuel, but your instruments show that you're on the glide path, and lined up with the runway. It's a beautiful, sunny day, and you can see the airport in the distance, across the grassy fields. But the crosswind is tricky, and it will take all your skill to land safely. You're coming down now, and the runway is getting closer. A bit left, OK, now lower the power, fine, now put down the flaps. Pull the nose up a bit more, you're a little low. Watch the power! Don't stall. OK. Here comes the runway. You hear the squeal of tires on

pavement, your pulse quickens, you're down, but watch it, you're pulling right! Brakes, brakes! Left more! You've stopped safely! Good job. The first real-time flight simulator for ATARI is now available from MMG Micro Software. Written entirely in machine language, there are four levels of difficulty, landings in clear or foggy weather, landings with or without instruments, and with or without the real-time view from the cockpit. **Final Flight!** requires Atari 400/800, 24K, 1 joy stick, and is offered on tape or disk for the same suggested retail price of \$29.95.

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is available at your local dealer or direct from **MMG Micro Software**. Just send check or money order to P.O. Box 131, Marlboro, N.J. 07746 or for Mastercard, Visa, and C.O.D. deliveries call **(201)431-3472**. Please add \$3.00 for postage and handling. New Jersey residents add 6% sales tax.

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