PUBLISHED BY SCHOLASTIC INC.

MAY
1984

VOLUME 2
NUMBER 5

APPLE'S MACINTOSH
A HANDS-ON REVIEW

FAMILY COMPUTING™

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What's Going on in the Home Computer Market?

How To Protect Your Disks

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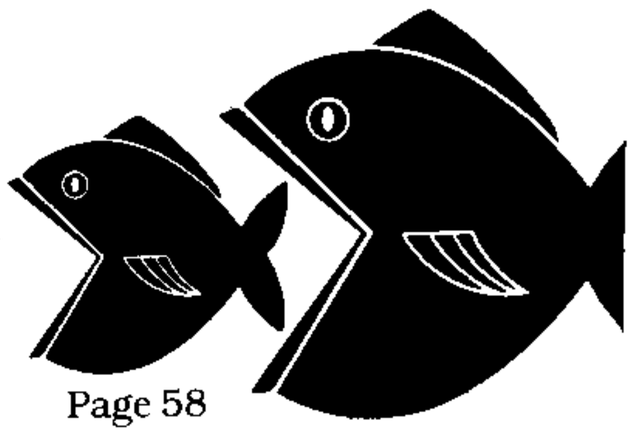

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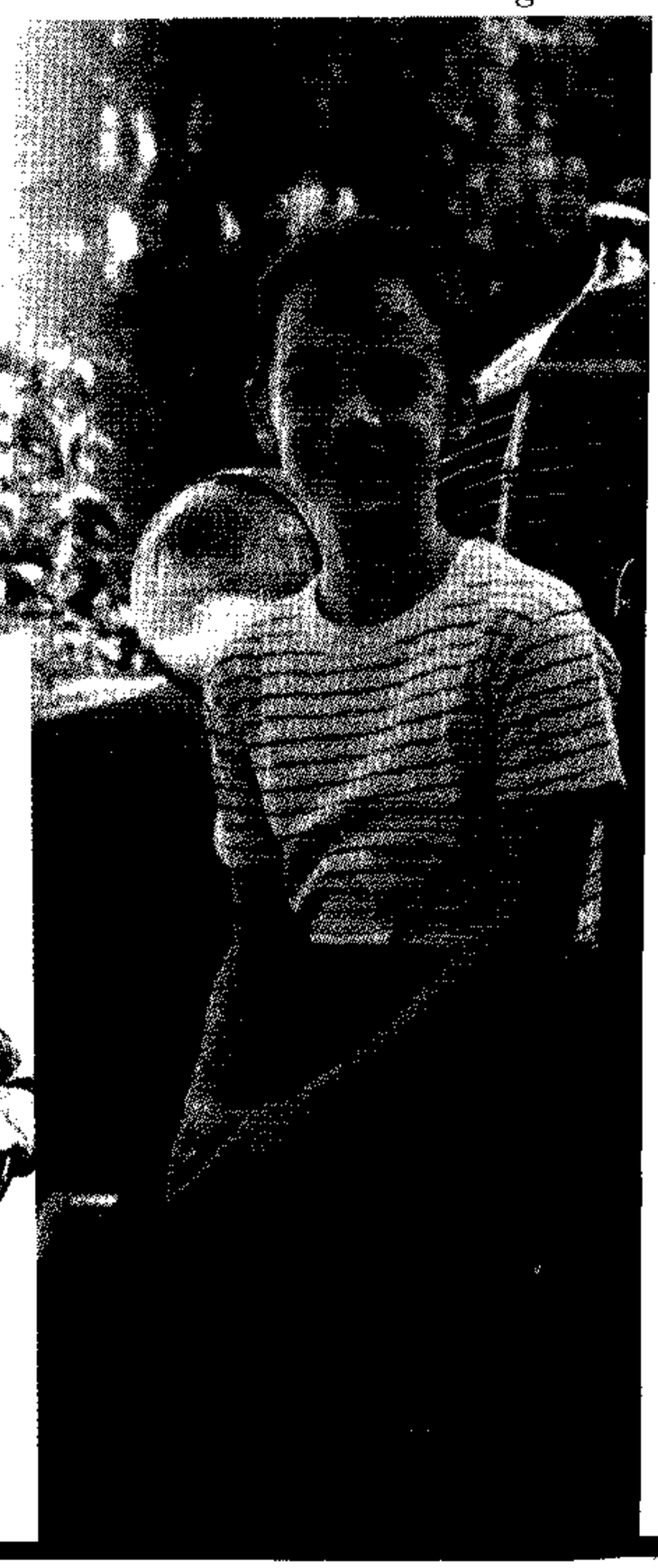

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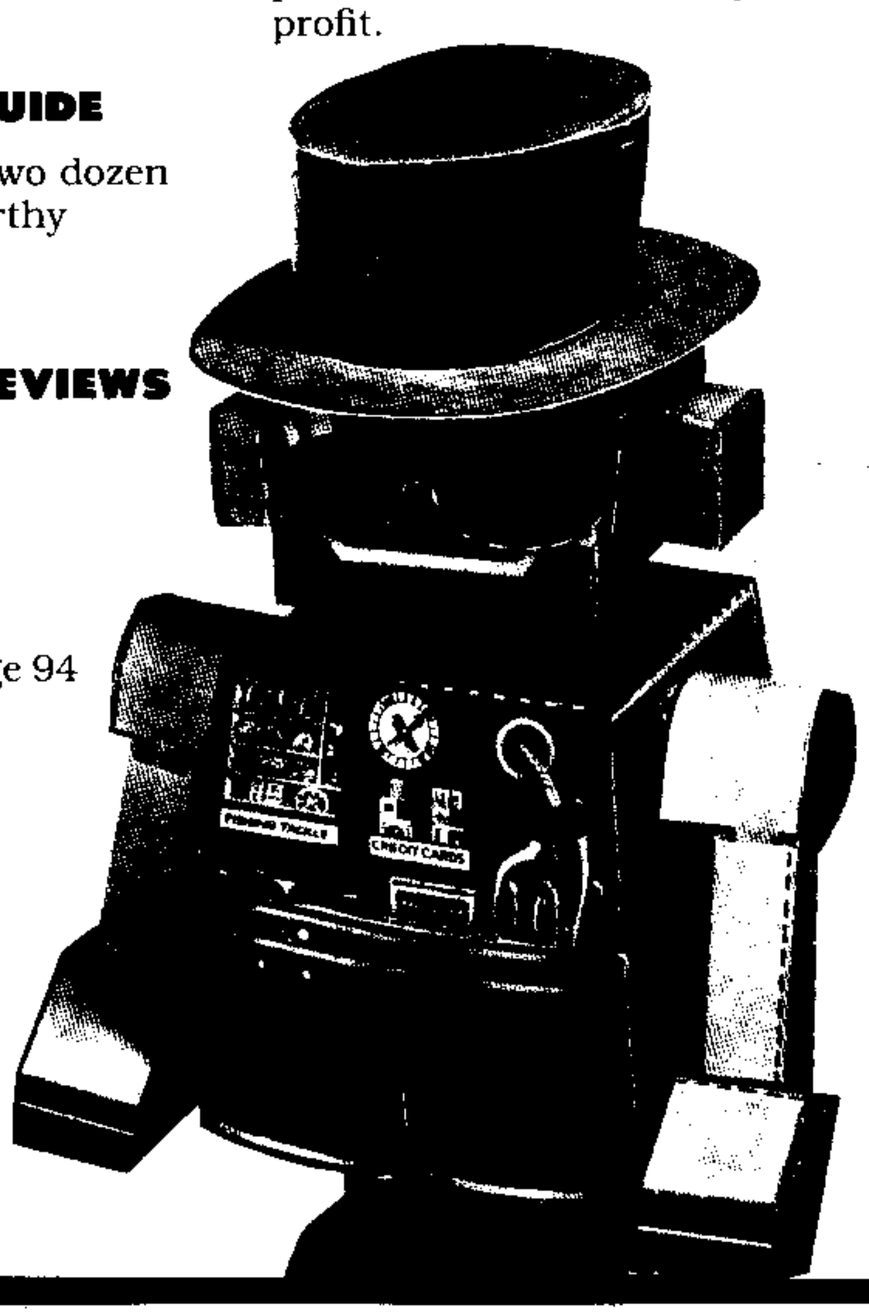

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COVER: THE PICTURE THAT APPEARS ON THE TELEVISION SCREEN IN OUR COVER PHOTOGRAPH IS TAKEN FROM THE AEROBICS *PROGRAM, BY SPINNAKER SOFTWARE. SEE PAGE 36 FOR MORE INFORMATION.*

LETTERS

IN DEFENSE OF ADAM

I would like to comment on your article about the ADAM computer (*January 1984 issue*). First, the digital data drive has 500K storage capacity, not 256K. Also, I read an article in a local newspaper that noted the same problem with the screen display—a waivering picture that caused all the words to blur. They solved the problem by changing the 15-foot cable connecting the television to the computer with a quality 1½ foot cable—and got an excellent picture. It seems the original cable acted like an antenna (high loss)!

In conclusion, I would like to thank you for printing programs for the ADAM. As far as I know, you are the first. Keep up the good work!

TOM TISBY
San Leandro, CA

EDITOR'S NOTE: *With two digital datadrives the ADAM has 500K storage capacity. However, only one drive is currently available, limiting capacity to 256K.*

Your review of the ADAM computer was clear, concise, and to the point. However, I feel that writing "the startling noise level . . . extremely slow . . . seems susceptible to breakdown . . . etc." is going way out on a limb.

After all, what can one expect in a low-cost printer? One cannot buy top-of-the-line for bottom price.

My point is this: When a statement is made such as "light construction" or "extremely slow," please state what you are comparing it to.

GEORGE M. KNOCHEL
Lakewood, CO

99'ERS—HERE TO STAY

Thank you for your invitation to your wonderful magazine. I have received the January issue, and I am very pleased with it. I am happy about the inclusion of programs for the TI-99/4A. Not many magazines include much for the 99'er enthusiast, maybe for fear that when Texas Instruments dropped their home computer line the 99'ers would fade into oblivion. Not so! We are here to stay, thanks to the International 99/4A Users' Group. Well, back to reading your wonderful magazine.

STEVE COLTEY
Mayfield, KY

COMPUTER COVERAGE

Thanks for "Better Safe Than Sorry" (*February 1984*), and for focusing on the growing importance of computer insurance. We'd like to add, since other insurance companies were identified, that SAFEWARE coverage is underwritten by Fireman's Fund Insurance Company. Also, SAFEWARE, The Insurance Agency Inc., is no longer connected with Columbia National General Agency. We've separated in order to specialize in computers. Thanks also for featuring our clients, the Hemmings of Pasadena.

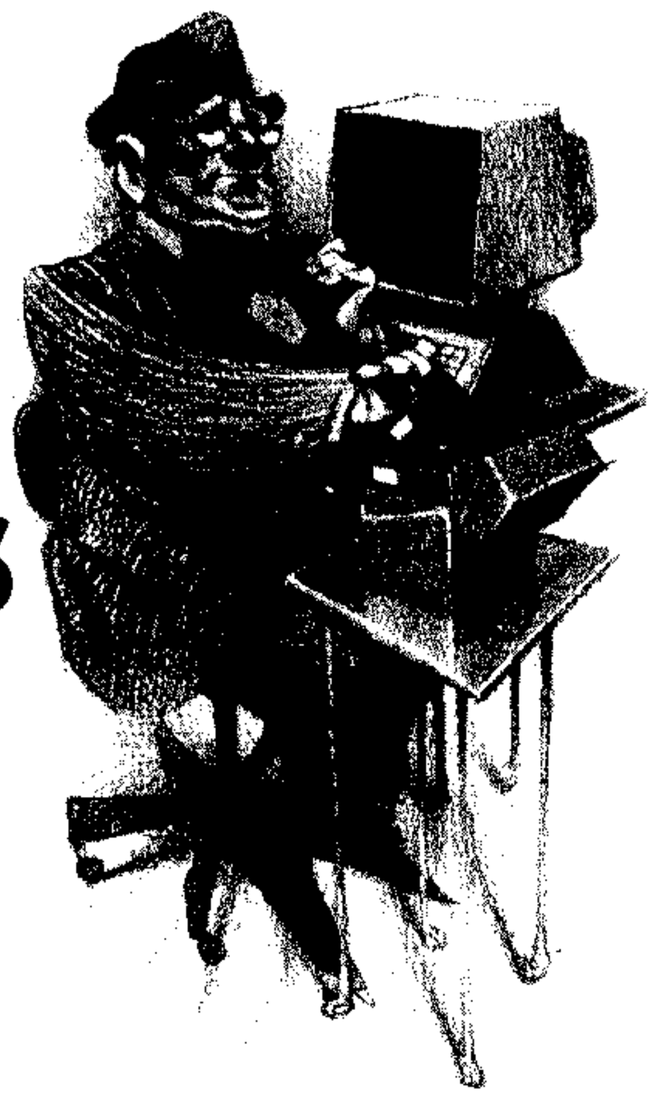
DAVID K. JOHNSTON,
Chief Operating Officer
SAFEWARE
Columbus, OH

A PRIZE FOR ALL SEASONS

Thank you for a very timely magazine. FAMILY COMPUTING has fit many of our needs at opportune times. My first grader, Jenny, needed a costume for the school's Homecoming Parade, and your costume (*October 1983 issue*) was the perfect choice. The Homecoming Parade was rained out but she wore it for the Hallow-

MIRROR-DEMOCRAT/MT. CARROLL, IL

Disk Care: 12 Don'ts and a Do



BY FOLLOWING THESE RULES, YOU AND YOUR FLOPPY DISKS CAN KEEP RUNNING SMOOTHLY TOGETHER

BY MARTHA GORE

Not long after the David Brown family brought home their new computer system, disaster struck.

In the first week, they'd learned to create data files. They'd filled half a dozen disks with their Christmas card mailing lists, telephone directories, medical and automotive expenses, mortgage payment records, and other essential information. With great satisfaction, they watched the information appear on the monitor when it was called up by its file name.

Then came the shock. When the computer was asked for a laboriously created telephone number file . . . the screen remained blank.

With trembling hands, they began to put other disks in the drive. Each one responded properly. What, the Browns wanted to know, had happened to the disk with the phone numbers? And how could they keep it from happening to their other files?

SOME BACKGROUND INFORMATION

A floppy disk looks a bit like a 45 rpm record, and acts a little like a cassette tape. But it's very different from both.

The disk itself is a round platter with a very sensitive, very thin metallic coating on which information can be stored magnetically, one bit at a time. A cassette tape does this also. But, unlike a cassette, a disk can cough up information from anywhere on its surface almost immediately, without passing through everything in between. Disks also pack in data much tighter than do cassettes. For these two reasons, disks are a faster and more efficient way of storing information. But densely packed data is especially susceptible to disruption, even by particles as small as 1/50,000th of an inch. This is why floppy factories are kept much cleaner than hospitals, and why you should treat your disks with respect.

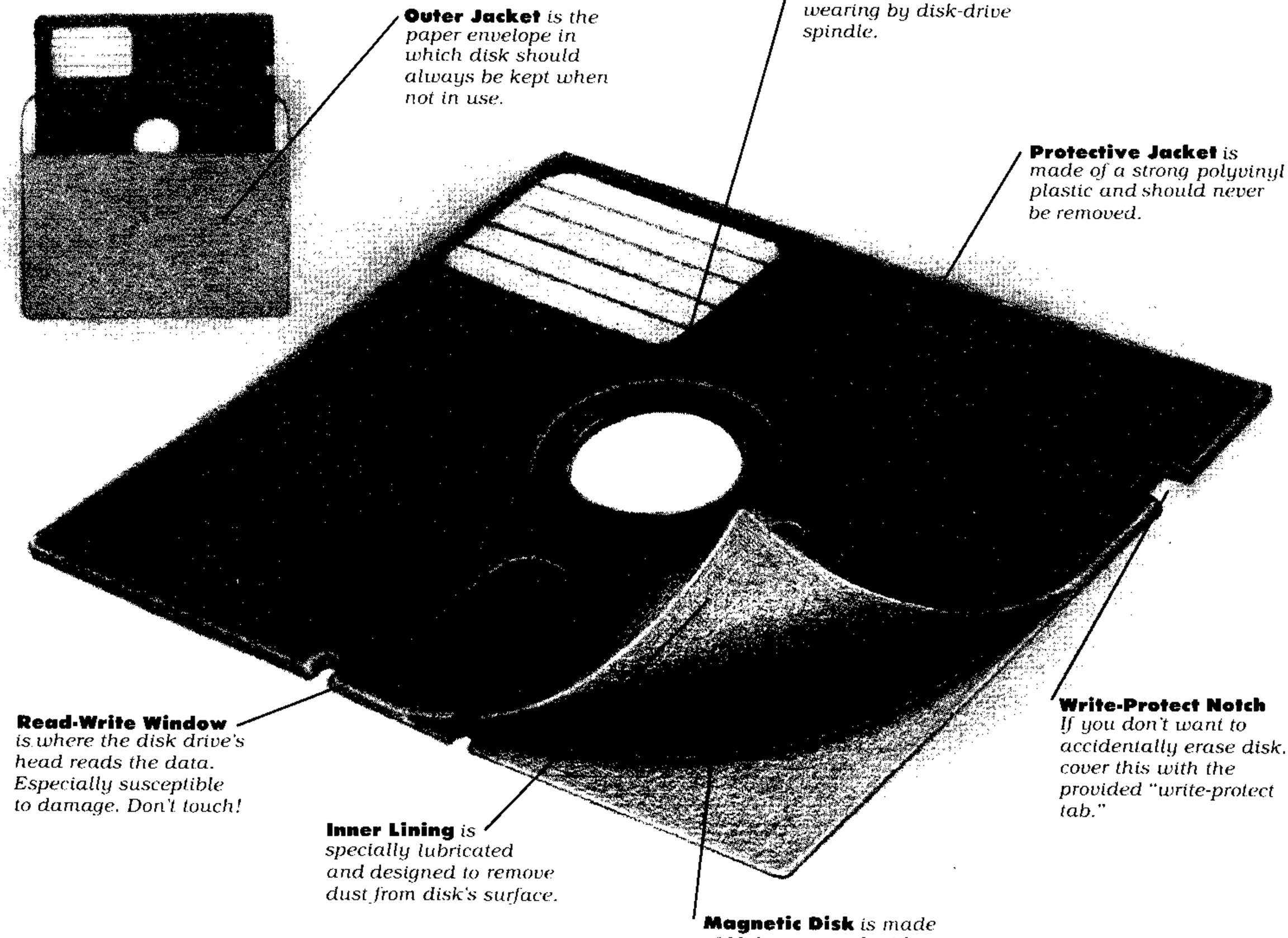
Each floppy comes with two protective envelopes or jackets. The outer jacket is removed before the disk is inserted in the drive. The inner jacket remains on the disk at all times. The magnetic disk rotates inside this jacket when it's in use. A low-friction lining inside the jacket helps keep the disk clean by trapping most contaminants.

A damaged disk usually has had crucial information changed, erased, or covered by some foreign substance. If you're listening to a tape, and there's a note missing, you'll be able to make out the rest of the music anyway. A computer cannot do this. One bit missing from the wrong place in your word-processing program can render it unusable. Damage to a disk's directory—the map that tells the computer where each block of information on the disk is located—can keep the computer from finding anything at all.

Sometimes a disk will be warped, making it run unevenly in the disk drive. In such a case, even though data is physically present, it won't be read properly.

Even many inexpensive disks are certified to operate properly for at least 3,500,000 "passes," or revolutions. That's about nine days of constant head contact, which is more than you're likely to use many disks. Some disk companies advertise that they meet higher standards set by ANSI, the American National

ILLUSTRATIONS BY CARTER GOODRICH



PARTICLES AS SMALL AS 1/50,000 OF AN INCH CAN DISRUPT DATA.

Standards Institute. You can even buy a so-called "intelligent" disk that will tell you if it's been exposed to high temperature or excess humidity. You may consider buying more expensive disks for daily use, and cheaper ones as backups. But whatever disk you buy, it won't be guaranteed to keep its memory unless you are willing to protect it.

Here's how. These rules, 12 DON'Ts and one DO, are almost guaranteed to keep you and your disks spinning along beautifully.

1 DON'T fold, spindle, mutilate, or touch the magnetic surface of a disk.

When taking a disk out of its storage box, handle it carefully. Remember, bending can cause permanent damage. Take the disk from its box by an upper corner; don't touch even the outer surface of the disk any more than necessary. Keep your fingers off the shiny parts of the disk that show through the inner lining. Fingerprints are a definite no-no, no matter how clean you keep your hands. The natural body oil on your hands can cause contamination. After you are through using the disk, *immediately* put it back into the outer protective jacket and then into the storage container.

2 DON'T expose your disks to extreme temperatures.

Extreme heat or cold can cause a disk to lose its memory. Avoid direct sunlight and never leave disks in a closed car. Disk manufacturers recommend a temperature range of 50 to 120 degrees Fahrenheit. A common way to damage a disk is to leave it in a closed car. Ten- to 80-percent humidity is considered safe. If a disk seems to have been damaged by heat, wait 24 hours before trying to use it. Sometimes, it will work again.

3 DON'T allow dust or other fine particles to contaminate disks.

House dust can be much larger than the particles that make up a disk's coating. Dust is probably the greatest culprit of all when it comes to destroying disk files. Not only can

Freelance writer MARTHA GORE *of Tucson, Arizona, has contributed to several national publications, including computer magazines.*

IF THE WORST HAPPENS

Sometimes, no matter what you do, the worst happens. Your disk won't boot. Then what?

Don't give up.

If it's a program disk, it may still be covered under warranty; if you've mishandled the disk, the manufacturer may replace it for a fee. Software companies vary widely in how they handle disk replacement—a very important part of after-sale support. Here are the policies of some leading manufacturers:

1. SOFTWARE COMPANY BACKUP POLICIES

Company	Policy
Broderbund	Defective disks replaced free; $5 fee if user-damaged.
CBS	Defective disks replaced free within 90 days; $5 fee thereafter.
CTW	Package contains backup disk.
Electronic Arts	Defective disks replaced free within 90 days; $7.50 fee thereafter.
Epyx	Defective disks replaced free within 30 days; $10 fee thereafter.
Infocom	Defective or damaged disks replaced free within 90 days; $5 fee thereafter.
The Learning Company	Defective disks replaced free within 90 days; $10 fee if user-damaged.
Microsoft	Defective disks replaced free within 90 days; $25 fee thereafter; user makes backup copies.
Muse	Defective disks replaced free; $10 fee if user-damaged.
Scholastic/Wizware	Defective disks replaced free within 60 days; $5 fee thereafter.
Sierra On-Line	Defective disks replaced free within 90 days; $5 fee thereafter; user makes backup copies.
Spinnaker	Defective disks replaced free within 30 days; $5 fee thereafter. Backup copy available for $12.
Visicorp	Defective disks replaced free within 90 days.
Xerox	Defective disks replaced free within 90 days; backup copy available for $10.

What if, like the Browns at the beginning of this article, you've damaged a data disk? There may still be hope. There is software for many computers that will restore parts of some damaged disks. The prices of such software vary widely. Before you buy, consider how often you might need it and how valuable your data is.

Using disk recovery software requires care and substantial expertise. Essentially, you are telling the computer where to look for its files. Therefore, you must know how your computer and disk drive stored them in the first place. Here are representative products for a number of home and personal computers:

2. DISK RECOVERY SOFTWARE

Computer	Program/Company/Address/Price
Apple II/II plus/IIe	*Bag of Tricks*/Quality Software; 21601 Marilla St., Chatsworth, CA 91311 $39.95
Atari 400/800/1200XL	*Disk Fixer/Load 'n' Go*/Atari Program Exchange; P.O. Box 3705, Santa Clara, CA 95055 $29.95
Commodore 64	*Di-Sector*/Starpoint Software; Star Rte. 10, Gazelle, CA 96034 $39.95
IBM PC	*Disk Magic*/Norell Data Systems; 3400 Wilshire Blvd., Los Angeles, CA 90010 $49.95
TRS-80 Models I/III/4	*Super Utility Plus*/Power Soft; 11500 Stemmons Expy., Suite 125, Dallas, TX 75229 $81.50
Texas Instruments 99/4A	*Disk Fixer*/Navarone Industries; 510 Lawrence Expy. #800, San Jose, CA 94086 $39.95

dust damage a disk, it can accumulate and damage a disk drive. Keep your disks in a closed container. Some head-cleaning disks claim to control dust and grime in your disk drive, but be wary of overusing them. Head cleaners themselves can be abrasive. You should have your disk-drive heads cleaned and maintained annually by a dealer.

4 DON'T smoke, eat, or drink around disks.

Smoke is a villain. If you must smoke near your computer, try to use a special ashtray that draws smoke into it. Yet even that won't eliminate loose cigarette ash.

Spilled drinks kill disks (though there have been some miraculous exceptions). Beverages are no good for keyboards, either. Put up a "no drinking" sign and ban all snacking from the area that holds your computer setup.

Chemical fumes can also affect the magnetic coating on a disk. Nail polish, cleaning agents, and glues are just a few products that can create vapors and should be kept away.

5 DON'T write on your disks with pencil or ballpoint pen.

To label your disk, write on the self-stick label *before* placing it on the disk. If you must write on the label after it has been placed on the disk, always use a soft-tipped pen. *Never* use a pencil or ballpoint pen; they can cause indentations far larger than the data you need to keep intact.

When you write, make sure the palm of your hand is not pressing on the disk jacket; the compression can damage the disk's magnetic surface. And don't use an eraser on a label; those minute rubber particles can also destroy your data.

6 DON'T leave your disks near a phone, TV, or any other source of magnetism.

Since the disk's memory is created by an arrangement of tiny magnetic particles, your disks must be protected from anything in the environment that may contain a magnetic field. Electromagnetic dangers come in all

FINGERPRINTS ARE A DEFINITE NO-NO, NO MATTER HOW CLEAN YOU KEEP YOUR HANDS.

shapes and sizes. Avoid allowing the disk to come in contact with telephones or television sets. Anything driven by an electric motor, including fans, typewriters, and air conditioners, can be a potential problem. Even paper clips, screwdrivers, car keys, and other metallic objects can become magnetized enough to alter a disk.

A good rule: If it's made of metal, keep it a safe distance from your disks. Plastic disk storage boxes, which cannot become magnetized, will eliminate some danger, especially if you must store your disks in a metal file cabinet.

7 DON'T expose disks to static electricity.

On an especially dry day, merely pointing a finger at your computer may create a spark. If sparks sometimes occur when you walk across the rug, there's a good chance they can also wipe out data and upset the functioning of your computer itself. Consider buying an antistatic spray, or an antistatic mat to place under your computer.

8 DON'T crowd your disks.

Don't ever stack piles of disks horizontally. And don't crowd disks, either vertically or horizontally. They can't take the pressure. Stacking can cause specks of dust to scratch their surfaces. It also can cause them to spin unevenly in the drive, making for unreliable data retrieval. In the words of one floppy disk promotional booklet, never trust data that wobbles.

IF A PHOTOGRAPH IS WORTH A THOUSAND WORDS, YOUR DISK MAY BE WORTH TENS OF THOUSANDS OF WORDS.

Never put a heavy object on top of a disk. For the same reason, never paper clip a disk to anything. No rubber bands. And, for heaven's sake, no thumbtacks.

9 DON'T insert or remove disks from your drive while they're spinning unless the manual says so.

On most computers, this is a good way to scramble your data unmercifully. (One exception is the Kaypro, whose disk drives always spin.) Pay attention to that disk-drive warning light.

On many computers—Apple and IBM are two major exceptions—power should never be turned on or off with disks in the drive.

10 DON'T mail or transport your disks without protecting them.

If a photograph is worth a thousand words, your disk may be worth tens of thousands of words. Before mailing it, package it as you would the finest photograph—so it can't be bent or folded by the United States Postal Service or any other carrier. Protect the disk on both sides with rigid, corrugated cardboard.

When planning to carry or ship disks by plane, mark them so they are kept away from X-ray machines, which generate a variety of stray magnetic fields.

11 DON'T allow unqualified individuals to handle your disks.

The people most likely to treat your disks right are the people who paid for them and depend on them—you, and those people in your family trained to use them. Make sure your children know and follow the rules of disk care. If you lend disks out, make sure the borrower is both trustworthy and competent.

12 DON'T get careless.

Follow instructions, and if you think you already know what you're doing, slow down a little. Many people follow rules carefully for a month or two, and then get sloppy.

If you're sure you won't want to "write over" a disk's contents, cover the small notch in the upper right-hand corner of your disk with the black or silver "write-protect tab" that comes with your box of disks. (Hint: Don't substitute clear scotch tape—most recently made disk drives will ignore it.)

Now that you know all the things not to do, here's something you should do without fail.

1 DO back up your disks.

Copying disks is nobody's idea of fun, but it will save you an enormous amount of hand-wringing should your original become damaged.

It's easier to copy disks if you own two drives, but if you only have one, there is software which reduces the number of times you have to reinsert each disk. *QUICK-COPYer* for the Texas Instruments 99/4A ($41.95) claims to reduce the time spent copying disks by 90 percent. Similar disk-copy programs are available for some other computers.

When should you copy disks?

Ideally, you should own one backup copy of every software disk you own. Some software companies include a backup in their price; others will sell you backups for a charge that varies widely, but is ordinarily only a fraction of the original purchase price. Others allow you to make your own copy. *(See sidebar, "If the Worst Happens," for the policies of some major software companies.)*

If you work extensively with data disks for programs such as word processors or data bases, you should make a daily backup. (More people pay lip service to this than actually do it. But they should.) Be sure to mark disk backup copies with the date they were made, so you can keep track of which is most current.

It's a good idea to inspect disks occasionally. Look over the surface that can be seen through the head access hole. (Don't move the disk around to see more.) Very shiny wide rings and scratches are indications of potential problems.

Check the round hole at the center of the disk; if it shows deterioration, make or buy a backup immediately. FC

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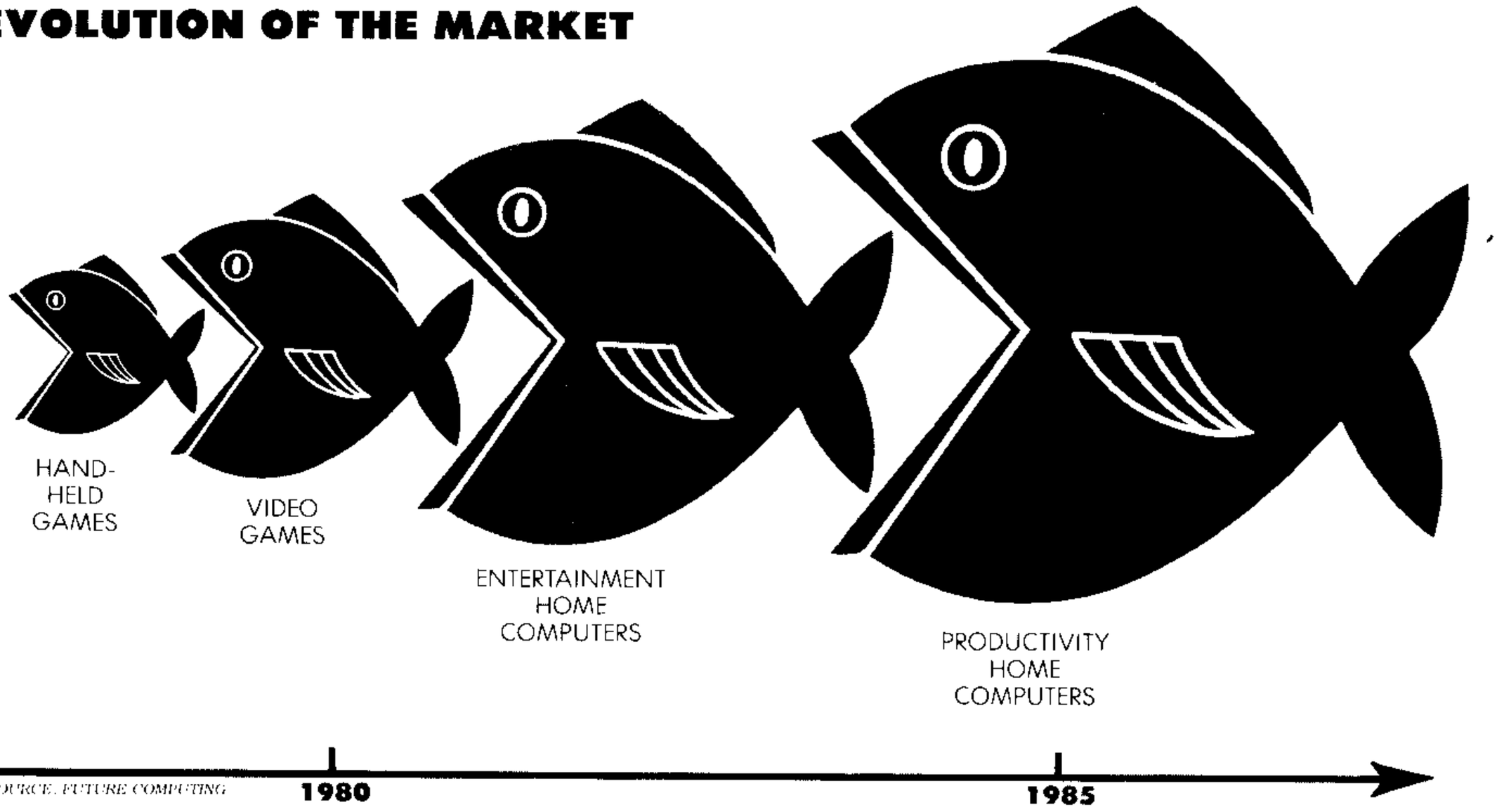
FISHING FOR A COMPUTER?

HERE'S AN OVERVIEW OF MAJOR MARKET TRENDS TO MAKE YOU A SMARTER SHOPPER

BY NICK SULLIVAN

EVOLUTION OF THE MARKET



SOURCE: FUTURE COMPUTING

When thinking about which computer to buy for home use, several brands often pop to mind. The only way to differentiate between them is by personal preference for the overall feel, and "anyone's guess" as to the manufacturer's stability and long-term support. But with an understanding of what's going on in the industry, you might be able to turn a wild guess into an informed one.

The most prevalent industry trends reflect new consumer trends. Computer buyers were once hobbyists, hackers, and businesses. Now, parents, children, teachers, artists, and independent business people are buying or thinking of buying computers. To sell to these new shoppers, manufacturers have made marketing a number one priority. Besides spending more on advertising, it means making computers easier to use and more productive, and supplying complete, ready-to-go systems.

1983

Last year was a wild one in the home computer industry, characterized by price cuts, heavy losses at several companies, and the demise of others. These events largely overshadowed the sale of four million home computers, which brought the number of computers in U.S. households to an estimated 7.6 million.

Price Cuts. Timex—treating computers like watches—lowered the price of its Timex 1000 to under $100, a new low in the industry. During last Christmas' selling season, it could be found for under $30. Texas Instruments followed suit. The price on its TI-99/4A, which once sold for $750, was lowered to under $100—and finally to $50 when TI discontinued the model and unloaded remaining inventory. The Commodore 64, which was introduced in 1982 at $595, was selling for less than $200 by mid-summer of 1983.

Apple, Radio Shack (for Models III and 4), and IBM held their prices at lofty levels, thus splitting the market and giving it two opposite poles: "High end" and "low end." There was nothing in the middle.

Heavy Losses. The rampant price-cutting spurred sales, but had a quick and negative effect on the profits of some companies. Texas Instruments and Timex were so hard hit they both dropped out of the home computer business—TI in October, 1983, and Timex the following February. Atari, which didn't cut prices as drastically as some others, lost over $500 million for the year.

By the end of 1983, the lineup looked like this: Commodore was batting lead off in the low end, with an estimated 35 percent share of the market. In the high end, IBM's PC and Apple's IIe--each with about a 20 percent share--were vying for the cleanup spot.

1984

Another year, another market. The primary focus has switched from price-cutting to price stabilization. Atari took a strong stand on the downward price spiral by actually raising the cost of its new 600XL and 800XL models. Surprisingly, the only price-cutting to date has come from the high end, where Apple dropped the price of its IIe.

Several other changes in the climate may prove more significant in the long run. These include widespread management changes at major computer companies, a new technique of "bundling" products, and the emergence of a "middle ground" price-wise.

The Package-Goods Challenge. To lead them into the mass market, two leading computer companies have brought in marketing talent from package-goods companies. Atari, founded by Nolan Bushnell, who went on to start Pizza Time Theatre, brought in James Morgan from Philip Morris as chief executive officer. Apple, founded by "two kids in a garage"—Steve Jobs and Steve Wozniak—lured John Sculley from Pepsico to lead the company's battle against IBM and its push into the home market.

Marketing upstages innovation. Old pros replacing young entrepreneurs and founding fathers is a symptom of marketing's new importance in the industry. Innovative new products used to be the driving force. But now, most compa-

PHONE COST MONITOR

BY JOEY LATIMER

Is the pleasure of talking long distance to your grandfather across the country marred by your worries of how much the call is costing? *Phone Cost Monitor* translates minutes into cents, right as you talk! You can also use it as a timer, and have your computer warn you when you've reached the total amount of money you wish to spend, or the length of time you wish to talk. (Note: The program can only give you an approximate cost since billing standards vary from state to state.)

Before using the program, first call your local operator and find out the length of the initial period (often one or three minutes), the cost of the initial period, and the cost of each minute thereafter. Be sure to explain where you are calling from and to, and what day of the week (including holidays) and time of day you intend to make the call. (This program won't work for calls that start and end during different rate periods.) To stop the program once you've completed the call, press any key. Type RUN, press RETURN or ENTER, and the program will start again.

ADAM, Apple, Atari, IBM PC*jr*, TI-99/4A, and TRS-80 Color Computer owners should note that the last number in line 670 fine-tunes the computer's timer. This number varies from computer to computer because some brands run faster than others. In addition, the timing of your computer may be slightly different from ours. Before actually using the program, you should first run at least a three-minute test against a clock to see if it times you for exactly three minutes (if you have the patience, a longer test period is recommended). If the program is running fast or slow, increase or decrease the number in line 670, starting first with a change of five.

ADAM/*Phone Cost Monitor*

```
70 HOME
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "Do you want to know ..."
110 PRINT
120 PRINT "1) When a certain amount of"
130 PRINT "money has been spent?"
140 PRINT "2) When a given amount of"
150 PRINT "time has elapsed?"
160 PRINT "3) Total charges for a call?"
180 PRINT
190 PRINT "Please enter number";
200 GET s$
220 IF s$ < "1" OR s$ > "3" THEN 200
240 HOME
250 PRINT "What is the initial charge for"
260 PRINT "this call?"
270 PRINT
280 PRINT "(Example: $? .59)"
290 PRINT
300 INPUT "$ "; ft
310 PRINT
320 INPUT "for how many minutes?"; bg
350 HOME
360 PRINT "How much for each minute"
370 PRINT "afterward?"
380 PRINT
390 INPUT "$ "; aa
400 HOME
410 ON VAL(s$) GOTO 420,470,510
420 PRINT "What do you want to spend"
430 PRINT "on this call?"
440 PRINT
450 INPUT "$ "; sp
460 GOTO 510
470 PRINT "How many minutes do you want"
480 PRINT "to talk?"
490 PRINT
500 INPUT "Minutes:"; tm
510 HOME
520 PRINT "Press <RETURN> when the other"
530 PRINT "party answers the phone."
550 GET a$
560 IF a$ <> CHR$(13) THEN 550
600 HOME
610 k = PEEK(64885)
620 co = ft
630 PRINT "----------------------"
640 PRINT "MONEY      ELAPSED TIME"
650 PRINT "SPENT      MINS.--SECS."
660 PRINT "----------------------"
670 FOR x = 1 TO 920
680 NEXT x
690 sec = sec + 1
700 IF sec > 59 THEN min = min + 1
710 IF sec > 59 THEN sec = 0
730 IF min >= bg AND sec = 1 THEN co = co + aa
780 VTAB 5
790 HTAB 0
800 PRINT co;"   ";
810 VTAB 5
820 HTAB 11
830 PRINT min;"   ";
840 VTAB 5
850 HTAB 18
860 PRINT sec;"   "
870 IF (s$ = "1" AND co >= sp) OR (s$ = "2" AND min >=
 tm) THEN 910
880 IF PEEK(64885) <> k THEN 1110
900 GOTO 670
910 HOME
920 IF s$ = "1" THEN PRINT "YOUR MONEY IS SPENT!"
930 IF s$ = "2" THEN PRINT "TIME'S UP!"
1100 END
1110 PRINT "STOPPED."
1120 END
```

Apple/*Phone Cost Monitor*

```
70 HOME
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW ..."
110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT OF MONEY"
130 PRINT "HAS BEEN SPENT?"
140 PRINT "2) WHEN A GIVEN AMOUNT OF TIME"
150 PRINT "HAS ELAPSED?"
```

```
890 IF A$ <> "" THEN 1110 ELSE 670
910 CLS
920 IF S$ = "1" THEN PRINT "YOUR MONEY IS SPENT!"
930 IF S$ = "2" THEN PRINT "TIME'S UP!"
960 PRINT
970 PRINT "PRESS ANY KEY TO SILENCE THE ALARM AND END
THE PROGRAM."
990 SOUND 3000,1
1000 FOR DL = 1 TO 100
1010 NEXT DL
1080 A$ = INKEY$
1090 IF A$ = "" THEN 990
1110 PRINT "STOPPED."
1120 END
```

IBM PC*jr*/*Phone Cost Monitor*

```
70 CLS
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW ..."
110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT OF MONEY HAS"
130 PRINT "BEEN SPENT?"
140 PRINT "2) WHEN A GIVEN AMOUNT OF TIME"
150 PRINT "HAS ELAPSED?"
160 PRINT "3) TOTAL CHARGES FOR A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER";
200 S$ = INKEY$
210 IF S$ = "" THEN 200
220 IF S$ < "1" OR S$ > "3" THEN 200
240 CLS
250 PRINT "WHAT IS THE INITIAL CHARGE"
260 PRINT "FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: $? .59)"
290 PRINT
300 INPUT "$";FT
310 PRINT
320 INPUT "FOR HOW MANY MINUTES";BG
350 CLS
360 PRINT "HOW MUCH FOR EACH MINUTE AFTERWARD?"
380 PRINT
390 INPUT "$";AT
400 CLS
410 ON VAL(S$) GOTO 420,470,510
420 PRINT "WHAT DO YOU WANT TO SPEND ON"
430 PRINT "THIS CALL?"
440 PRINT
450 INPUT "$";SP
460 GOTO 510
470 PRINT "HOW MANY MINUTES DO YOU WANT TO TALK?"
490 PRINT
500 INPUT "MINUTES:";TM
510 CLS
520 PRINT "PRESS <ENTER> WHEN THE OTHER PARTY"
530 PRINT "ANSWERS THE PHONE."
550 A$ = INKEY$
560 IF A$ <> CHR$(13) THEN 550
600 CLS
610 CO = FT
630 PRINT STRING$(22,45)
640 PRINT "MONEY";SPACE$(5);"ELAPSED TIME"
650 PRINT "SPENT";SPACE$(5);"MINS.--SECS."
660 PRINT STRING$(22,45)
670 FOR X = 1 TO 515
680 NEXT X
690 SE = SE+1
700 IF SE > 59 THEN MIN = MIN+1
710 IF SE > 59 THEN SE = 0
730 IF MIN >= BG AND SE = 1 THEN CO = CO+AT
780 LOCATE 5,3
790 PRINT CO;
800 LOCATE 5,12
810 PRINT MIN;
820 LOCATE 5,19
830 PRINT SE
870 IF (S$ = "1" AND CO >= SP) OR (S$ = "2" AND MIN >=
 TM) THEN 910
880 A$ = INKEY$
890 IF A$ <> "" THEN 1110 ELSE 670
910 CLS
920 IF S$ = "1" THEN PRINT "YOUR MONEY IS SPENT!"
930 IF S$ = "2" THEN PRINT "TIME'S UP!"
960 PRINT
970 PRINT "PRESS ANY KEY TO SILENCE THE ALARM AND"
980 PRINT "END THE PROGRAM."
990 SOUND 3000,1
1000 FOR DL = 1 TO 100
1010 NEXT DL
1080 A$ = INKEY$
1090 IF A$ = "" THEN 990
1110 PRINT "STOPPED."
1120 END
```

TI-99/4A/*Phone Cost Monitor*

```
70 CALL CLEAR
80 PRINT "TELEPHONE COST MONITOR"
90 PRINT
100 PRINT "DO YOU WANT TO KNOW ..."
110 PRINT
120 PRINT "1) WHEN A CERTAIN AMOUNT OF"
130 PRINT "MONEY HAS BEEN SPENT?"
140 PRINT "2) WHEN A GIVEN AMOUNT OF"
150 PRINT "TIME HAS ELAPSED?"
160 PRINT "3) TOTAL CHARGES FOR A CALL?"
180 PRINT
190 PRINT "PLEASE ENTER NUMBER";
200 INPUT S$
220 IF S$<"1" THEN 200
230 IF S$>"3" THEN 200
240 CALL CLEAR
250 PRINT "WHAT IS THE INITIAL CHARGE"
260 PRINT "FOR THIS CALL?"
270 PRINT
280 PRINT "(EXAMPLE: $? .59)"
290 PRINT
300 INPUT "$":FT
310 PRINT
320 PRINT "FOR HOW MANY MINUTES?"
330 PRINT
340 INPUT BG
350 CALL CLEAR
360 PRINT "HOW MUCH FOR EACH MINUTE"
370 PRINT "AFTERWARD?"
380 PRINT
390 INPUT "$":AT
400 CALL CLEAR
410 ON VAL(S$)GOTO 420,470,510
420 PRINT "WHAT DO YOU WANT TO SPEND"
430 PRINT "ON THIS CALL?"
440 PRINT
450 INPUT "$":SP
460 GOTO 520
470 PRINT "HOW MANY MINUTES"
480 PRINT "DO YOU WANT TO TALK?"
490 PRINT
500 INPUT "MINUTES:":TM
510 CALL CLEAR
520 PRINT "PRESS <ENTER> WHEN THE OTHER"
530 PRINT "PARTY ANSWERS THE PHONE."
550 CALL KEY(0,KEY,STATUS)
560 IF KEY<>13 THEN 550
600 CALL CLEAR
```

```
410 ON VAL(S$) GOTO 420,470,510
420 PRINT "WHAT DO YOU WANT TO"
430 PRINT "SPEND ON THIS CALL?"
440 PRINT
450 INPUT "$";SP
460 GOTO 510
470 PRINT "HOW MANY MINUTES"
480 PRINT "DO YOU WANT TO TALK?"
490 PRINT
500 INPUT "MINUTES:";TM
510 PRINT CHR$(147)
520 PRINT "PRESS <RETURN> WHEN"
530 PRINT "THE OTHER PARTY"
540 PRINT "ANSWERS THE PHONE."
550 GET A$
560 IF A$ <> CHR$(13) THEN 550
570 TIME$ = "000000"
600 PRINT CHR$(147)
620 CO = FT
630 PRINT "----------------------"
640 PRINT "MONEY    ELAPSED TIME"
650 PRINT "SPENT    MINS.--SECS."
660 PRINT "----------------------"
670 MIN = VAL(MID$(TIME$,3,2))+VAL(LEFT$(TIME$,2))*60
680 SEC = VAL(RIGHT$(TIME$,2))
730 IF FL = 0 AND MIN >= BG AND SEC = 1 THEN CO = CO+
T
760 IF SEC = 1 THEN FL = 1
770 IF SEC <> 1 THEN FL = 0
780 PRINT CHR$(19),TAB(110);CO;
790 PRINT CHR$(19),TAB(120);MIN;
800 PRINT CHR$(19),TAB(127);RIGHT$(TIME$,2)
840 IF (S$ = "1" AND CO >= SP) OR (S$ = "2" AND MIN >=
 TM) THEN 910
880 GET A$
890 IF A$ <> "" THEN 1110
900 GOTO 670
910 PRINT CHR$(147)
920 IF S$ = "1" THEN PRINT "YOUR MONEY IS SPENT!"
930 IF S$ = "2" THEN PRINT "TIME'S UP!"
960 PRINT
970 PRINT "PRESS ANY KEY TO"
980 PRINT "SILENCE THE ALARM AND END THE PROGRAM."
990 POKE 36878,101
1000 POKE 36874,215
1010 POKE 36874,241
1020 FOR DE = 1 TO 100
1030 NEXT DE
1040 POKE 36874,0
1080 GET A$
1090 IF A$ = "" THEN 1000
1110 PRINT "STOPPED."
1120 END
```

MODIFICATION

TRS-80 Model 4/*Phone Cost Monitor*

Use the Model III version, with the following alterations: Omit lines 580 and 590. Add line 60:

```
60 PRINT CHR$(15)
```

Finally, change lines 570, 670, and 780-800 to read as follows:

```
570 SYSTEM "TIME 00:00:00"
670 MIN=VAL(MID$(TIME$,4,2))+VAL(LEFT$(TIME$,2))*60
780 PRINT@402,CO;"    "
790 PRINT@411,MIN;"    "
800 PRINT@418,SEC;"    "
```

ATTENTION PROGRAMMERS!

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MOTHER'S DAY CARD

BY JOEY LATIMER

This Mother's Day, why not say it with your computer? Put aside your favorite game and type in our *Mother's Day Card* program. Set your computer to all upper-case letters, run the program, and answer the questions. Then call your mother into the room. After she's answered a few questions, a personalized *Mother's Day Card,* which says everything you've been too shy to say for years, will appear on the screen! We promise you she'll never forget it! (And while you're at it, why not wrap a ribbon around the computer, or surprise her with a rose on the keyboard?)

ADAM/*Mother's Day Card*

```
10 HOME
20 PRINT "MOTHER'S DAY CARD"
30 FOR d = 1 TO 2000
40 NEXT d
50 GOSUB 1000
60 PRINT "WHAT IS YOUR FIRST NAME?"
70 INPUT n$
80 PRINT
90 PRINT "DO YOU HAVE A PET? (Y/N)"
100 INPUT p$
110 IF LEFT$(p$,1) <> "Y" THEN 140
120 PRINT "WHAT IS YOUR PET'S NAME?"
130 INPUT pn$
140 HOME
150 PRINT "O.K., ";n$;"! PRESS <RETURN>,"
160 PRINT "THEN GO GET YOUR MOTHER."
170 INPUT r$
180 HOME
190 PRINT "HI MOM!"
200 PRINT
210 GOSUB 1010
220 PRINT "IF YOU COULD TAKE A TRIP TO"
230 PRINT "ANYPLACE IN THE WORLD,"
240 PRINT "WHERE WOULD YOU GO?"
250 INPUT pl$
260 HOME
270 PRINT "WHO IS THE MOST"
280 PRINT "HANDSOME MOVIE STAR?"
290 INPUT ms$
300 HOME
310 PRINT "WHAT IS YOUR FAVORITE"
320 PRINT "GOURMET DISH?"
330 INPUT gm$
340 HOME
350 PRINT "IF YOU HAD A MILLION DOLLARS,"
360 PRINT "WHAT IS THE FIRST"
370 PRINT "THING YOU WOULD BUY?"
380 PRINT "(USE 'A' OR 'AN')"
390 INPUT ob$
400 HOME
410 PRINT "DEAR MOM,"
420 PRINT
430 PRINT "I CAN'T SEND YOU TO"
440 PRINT "  ";pl$;","
450 PRINT "ALTHOUGH I WISH I COULD."
```

```
240 PRINT "WHERE WOULD YOU GO?"
250 INPUT PL$
260 CLS
270 PRINT "WHO IS THE MOST HANDSOME MOVIE STAR?"
280 INPUT MS$
290 CLS
300 PRINT "WHAT IS YOUR FAVORITE GOURMET DISH?"
310 INPUT GM$
320 CLS
330 PRINT "IF YOU HAD A MILLION DOLLARS,"
340 PRINT "WHAT IS THE FIRST THING YOU WOULD BUY?"
350 PRINT "(USE 'A' OR 'AN')"
360 INPUT OB$
370 CLS
380 PRINT "DEAR MOM,"
390 PRINT
400 PRINT "I CAN'T SEND YOU TO"
410 PRINT "  ";PL$;","
420 PRINT "ALTHOUGH I WISH I COULD."
430 PRINT "I'D GIVE YOU"
440 PRINT "  ";MS$;"'S NUMBER,"
450 PRINT "BUT THAT MIGHT NOT BE SO GOOD."
460 PRINT "I WON'T COOK YOU"
470 PRINT "  ";GM$;","
480 PRINT "'CAUSE I'D BURN IT TILL IT'S BLACK."
490 PRINT "I CAN'T BUY YOU"
500 PRINT "  ";OB$
510 PRINT "WITH THE MONEY THAT I LACK."
520 PRINT
530 PRINT "BUT ... I CAN GIVE YOU LOVE."
540 PRINT
550 PRINT
560 PRINT TAB(6);"*HAPPY MOTHER'S DAY*"
570 PRINT
580 PRINT TAB(7);"LOVE, ";N$
590 IF LEFT$(P$,1)<>"Y" THEN 590
600 PRINT TAB(9);"(AND ";PN$;" TOO!)"
610 GOTO 610
1000 CLS
1010 PRINT "PLEASE PRESS <ENTER> AFTER"
1020 PRINT "TYPING EACH ANSWER."
1030 PRINT
1040 RETURN
```

TI-99/4A/*Mother's Day Card*

```
10 CALL CLEAR
20 PRINT "MOTHER'S DAY CARD"
30 FOR D=1 TO 1000
40 NEXT D
50 GOSUB 1000
60 PRINT "WHAT IS YOUR FIRST NAME?"
70 INPUT N$
80 PRINT
90 PRINT "DO YOU HAVE A PET? (Y/N)"
100 INPUT P$
110 IF SEG$(P$,1,1)<>"Y" THEN 140
120 PRINT "WHAT IS YOUR PET'S NAME?"
130 INPUT PN$
140 CALL CLEAR
150 PRINT "O.K., ";N$;"! PRESS <ENTER>,"
160 PRINT "THEN GO GET YOUR MOTHER."
170 INPUT R$
180 CALL CLEAR
190 PRINT "HI MOM!"
200 PRINT
210 GOSUB 1010
220 PRINT "IF YOU COULD TAKE A TRIP TO"
230 PRINT "ANYPLACE IN THE WORLD, WHERE"
240 PRINT "WOULD YOU GO?"
250 INPUT PL$
260 CALL CLEAR
270 PRINT "WHO IS THE MOST"
280 PRINT "HANDSOME MOVIE STAR?"
290 INPUT MS$
300 CALL CLEAR
310 PRINT "WHAT IS YOUR FAVORITE"
320 PRINT "GOURMET DISH?"
330 INPUT GM$
340 CALL CLEAR
350 PRINT "IF YOU HAD A MILLION"
360 PRINT "DOLLARS, WHAT IS THE FIRST"
370 PRINT "THING YOU WOULD BUY?"
380 PRINT "(USE 'A' OR 'AN')"
390 INPUT OB$
400 CALL CLEAR
410 PRINT "DEAR MOM,"
420 PRINT
430 PRINT "I CAN'T SEND YOU TO"
440 PRINT "  ";PL$;","
450 PRINT "ALTHOUGH I WISH I COULD."
460 PRINT "I'D GIVE YOU"
470 PRINT "  ";MS$;"'S NUMBER,"
480 PRINT "BUT THAT MIGHT NOT BE GOOD."
490 PRINT "I WON'T COOK YOU"
500 PRINT "  ";GM$;","
510 PRINT "'CAUSE I'D BURN IT TILL IT'S BLACK."
520 PRINT "I CAN'T BUY YOU"
530 PRINT "  ";OB$
540 PRINT "WITH THE MONEY THAT I LACK."
550 PRINT
560 PRINT "BUT ... I CAN GIVE YOU LOVE."
570 PRINT
580 PRINT
590 PRINT TAB(7);"*HAPPY MOTHER'S DAY*"
600 PRINT
610 PRINT TAB(8);"LOVE, ";N$
620 IF SEG$(P$,1,1)<>"Y" THEN 620
630 PRINT TAB(10);"(AND ";PN$;" TOO!)"
640 GOTO 640
1000 CALL CLEAR
1010 PRINT "PLEASE PRESS <ENTER>"
1020 PRINT "AFTER TYPING EACH ANSWER."
1030 PRINT
1040 RETURN
```

Timex Sinclair 1000 w/16K RAM Pack, 1500, & 2068/*Mother's Day Card*

```
10 CLS
20 SLOW
30 PRINT "MOTHER'S DAY CARD"
40 FOR D=1 TO 100
50 NEXT D
60 GOSUB 1000
70 PRINT "WHAT IS YOUR FIRST NAME?"
80 INPUT N$
90 PRINT
100 PRINT "DO YOU HAVE A PET? (Y/N)"
110 INPUT P$
120 IF P$(1)<>"Y" THEN GOTO 150
130 PRINT "WHAT IS THE NAME OF YOUR PET?"
140 INPUT A$
150 CLS
160 PRINT "O.K., ";N$;", PRESS <ENTER>,"
170 PRINT "THEN GO GET YOUR MOTHER."
180 INPUT T$
190 CLS
200 PRINT "HI MOM."
210 PRINT
220 GOSUB 1010
230 PRINT "IF YOU COULD TAKE A TRIP TO"
240 PRINT "ANYPLACE IN THE WORLD,"
250 PRINT "WHERE WOULD YOU GO?"
260 INPUT L$
270 CLS
280 PRINT "WHO IS THE MOST"
290 PRINT "HANDSOME MOVIE STAR?"
300 INPUT M$
310 CLS
320 PRINT "WHAT IS YOUR FAVORITE"
330 PRINT "GOURMET DISH?"
340 INPUT G$
350 CLS
360 PRINT "IF YOU HAD A MILLION DOLLARS,"
370 PRINT "WHAT IS THE FIRST THING"
```

THE MYSTERY OF THE UNKNOWN GADGET

BY PETER FAVARO

Brendan McCorduck is a cabinetmaker by trade, but his passion in life is tinkering. He would, of course, be highly insulted to be known as a common tinkerer and prefers to call himself a "gadgetrist."

While Brendan's ideas are always practical, they are seldom timely. Thus, the world will probably never see the likes of the McCorduck vegetable slicer/clock radio he has spent the last two years perfecting, nor the pocket golf ball washer that rolls idly across his desk. As far as Brendan is concerned, the world just isn't ready to understand the value of such creations, and he remains perfectly content to tinker about his home—an abandoned movie prop house.

When Brendan first got permission to rent the prop house, it was like a dream come true. He loved to pass the time playing with the props and gadgets constructed by his predecessor, a movie engineer who was no doubt "a gadgetrist" in his own right. Though the prop house hadn't been used since the days of silent films, Brendan was so enthralled with the atmosphere that he did little more than dust off most of the props and move his things in right alongside. He even left the old yellow inventory tags on most of the items.

PETER FAVARO, PH.D., *is an education and recreation video-game design consultant, whose first invention was a bathtub "boat capsizer" made from the cap of his mom's hairspray can. He is currently writing a book on educational computing for Prentice-Hall, and is the author of last month's puzzle.*

One day recently, while rummaging through an old trunk that had been gathering dust in the corner, Brendan came across an old roll of movie film and a yellowed diary page belonging to the movie engineer and dated 1927. In faded ink, the movie engineer confessed his worries about an unscrupulous propmaster who sought to steal his plans for an invention that would "revolutionize the moving picture industry."

The movie engineer then proceeded to congratulate himself on how he had cleverly constructed his invention out of six movie props, thereby being able to store his invention, unassembled, right under the propmaster's nose! When Brendan held the roll of movie film up to the light, he discovered that it contained the plans for the invention. The frames contained step-by-step directions for assembly, with each frame showing one step. Brendan also noticed that each frame number matched an inventory tag number on a prop in the room.

But to his dismay, Brendan discovered that in order to throw off the unscrupulous propmaster, the movie engineer also had included a number of props and directions that weren't necessary to his invention. Somehow, Brendan had to figure out how to select the correct six props and in which order they should be assembled. If only he could decipher the hidden clues in the peculiar directions!

HOW TO PLAY

Set your computer for all upper-case letters and turn the volume up. Type in an inventory tag number. The corresponding frame on the roll of film will appear on your screen, along with the written directions. Study all the directions carefully, for there's more to them than first meets the eye. You are not allowed to guess until you've viewed at least six frames, whereupon the prompt "S" for solve will appear and remain on the screen. There is no limit to the number of frames that you can view on the roll of film before you guess.

When you are ready to guess, type "S" and then the six inventory tag numbers in the order that you think is correct, pressing the RETURN or ENTER key after each entry. The computer will then attempt to assemble the invention, following the sequence you've given. If you select the wrong props, or the correct props in the wrong order, the invention won't work. If you guess correctly, the computer will assemble a working version of the invention, which will perform on your screen. You can get an additional clue by typing "H," for help, after you've guessed incorrectly. The solution will appear in the next issue.

Commodore 64/*Mystery Gadget*

```
10 DIM A$(27):WL=40:P1=0:PF=0:C=0:C$=CHR$(147)
20 FOR X=1 TO 39:HP$=HP$+CHR$(29):NEXT X
30 FOR X=1 TO 23:VP$=VP$+CHR$(17):NEXT X
40 FOR X=1 TO 15:READ A$(X):NEXT X
50 FOR X=16 TO 20:READ T$:FOR Y=1 TO LEN(T$)-6:E=ASC(M
ID$(T$,Y,1))+3
60 IF E=49 THEN E=32
70 A$(X)=A$(X)+CHR$(E):NEXT Y:NEXT X
80 FOR X=18 TO 23:AN(X-17)=ASC(MID$(T$,X,1))-68:NEXT X
90 FOR X=21 TO 26:READ A$(X):NEXT X:A$(27)=" "
100 FOR X=1 TO 50:A$(27)=A$(27)+" ":NEXT X
110 FOR X=0 TO 6:READ P(X):NEXT X
120 PRINT C$:R$="NOW PLAYING":GOSUB 3000:R$="*MYSTERY
GADGET*":GOSUB 3000
130 H=P(3):GOSUB 2000:R$="ENTER INVENTORY TAG NUMBER,"
140 IF C>=6 THEN R$=R$+" 'S' TO SOLVE,"
150 R$=R$+" OR 'Q' TO QUIT.":GOSUB 1000
160 H=P(5):GOSUB 2000:PRINT "-->";:INPUT N$
170 H=P(5):GOSUB 2000:PRINT A$(27);
180 IF LEFT$(N$,1)="Q" THEN PRINT C$:END
190 IF LEFT$(N$,1)="S" AND C>=6 THEN 320
200 IF N$<"1" OR N$>"9" THEN 160
210 N=VAL(N$):IF N<1 OR N>15 THEN 160
220 C=C+1
230 PRINT C$:H=P(0):GOSUB 2000:GOSUB 4000:H=P(6):GOSUB
 2000:GOSUB 4000
240 H=P(1):GOSUB 2000:R$="FRAME #"+N$:GOSUB 3000
250 H=P(5):GOSUB 2000:R$="PLEASE PRESS ANY KEY":GOSUB
3000
260 H=P(2):GOSUB 2000:PRINT TAB(WL/3);
270 FOR X=1 TO LEN(A$(N)):PRINT MID$(A$(N),X,1);
280 IF MID$(A$(N),X,1)=" " THEN PRINT:PRINT TAB(WL/3);
290 NEXT X
300 GET K$:IF K$="" THEN 300
310 GOTO 120
320 PRINT C$:R$="ASSEMBLY INSTRUCTIONS":GOSUB 3000
330 H=P(3):GOSUB 2000:R$="ENTER TAG NUMBER FOR":GOSUB
1000
340 CR=4:FOR X=1 TO 6
350 H=P(4):GOSUB 2000:PRINT A$(X+20);" PROP";:INPUT N$
```

ILLUSTRATION BY JOSH GOSFIELD

```
360 H=P(4):GOSUB 2000:PRINT A$(27):IF N$<"1" OR N$>"9"
 THEN 350
370 RE(X)=VAL(N$):IF RE(X)<1 OR RE(X)>15 THEN 350
380 H=CR*WL:GOSUB 2000:PF=1
390 R$=TR$+A$(RE(X)):GOSUB 1000:PF=0:NEXT X:TR$=""
420 H=P(3):GOSUB 2000:PRINT A$(27):H=P(5):GOSUB 2000
430 R$="PLEASE PRESS ANY KEY":GOSUB 3000
440 GET K$:IF K$="" THEN 440
450 PRINT C$:H=P(6):GOSUB 2000:R$="PROCESSING ...":GOS
UB 3000
460 FOR D=1 TO 25:PRINT:FOR S=1 TO 100:NEXT S:NEXT D
470 FL=0:FOR X=1 TO 6:IF RE(X)<>AN(X) THEN FL=1
480 NEXT X:IF FL=0 THEN 590
490 PRINT C$:R$="BAD GUESS!":GOSUB 3000
500 H=P(3):GOSUB 2000:R$="AN INTERESTING IDEA, THOUGH!
":GOSUB 1000
510 R$="PRESS 'H' FOR A HINT, OR ANY OTHER KEY TO CONT
INUE PLAY.":GOSUB 1000
520 GET K$:IF K$="" THEN 520
530 IF LEFT$(K$,1)<>"H" THEN 120
540 PRINT C$:R$="A LITTLE HINT ...":GOSUB 3000:H=P(2):
GOSUB 2000
550 FOR X=16 TO 19:R$=A$(X):GOSUB 1000:NEXT X
560 H=P(5):GOSUB 2000:R$="PLEASE PRESS ANY KEY":GOSUB
3000
570 GET K$:IF K$="" THEN 570
580 GOTO 120
590 PRINT C$:H=P(0):GOSUB 2000:R$="WHAT'S THAT SIZZLIN
G SOUND?":GOSUB 1000
600 VO=54296:WV=54276:AK=54277:HF=54273:LF=54272
610 FOR X=54272 TO 54296:POKE X,0:NEXT X
620 POKE VO,15:POKE WV,129:POKE AK,15:POKE HF,40:POKE
LF,200
630 FOR X=1 TO 1000:NEXT X
640 POKE WV,0:POKE AK,0:PRINT CHR$(158);
650 PRINT C$:FOR X=1 TO LEN(A$(20))
660 PRINT TAB(X+(WL-LEN(A$(20)))/2);MID$(A$(20),X,1);
670 POKE VO,15:POKE WV,129:POKE AK,4:POKE HF,40:POKE L
F,200
680 FOR D=1 TO RND(0)*50:NEXT D:POKE WV,0:POKE AK,0
690 NEXT X:PRINT CHR$(158);
700 FOR X=200 TO 1 STEP -1:H=RND(0)*WL*20+WL*2:GOSUB 2
000
710 PRINT CHR$(113);
720 POKE VO,15:POKE WV,129:POKE AK,4:POKE HF,40:POKE L
F,200
730 FOR D=1 TO RND(0)*X:NEXT D
740 POKE WV,0:POKE AK,0:NEXT X:END
1000 J=0:IF LEN(R$)<=WL THEN PRINT R$:GOTO 1030
1010 FOR I=1 TO WL-1:IF MID$(R$,I,1)=" " THEN J=I
1020 NEXT I:PRINT LEFT$(R$,J):R$=RIGHT$(R$,LEN(R$)-J):
CR=CR+1:GOTO 1000
1030 IF PF=1 THEN TR$=R$+" "
1040 R$="":RETURN
2000 VE=INT(H/WL):LA=INT(H-VE*WL+P1)
2010 PRINT CHR$(19);:IF VE>0 THEN PRINT LEFT$(VP$,VE);
2020 IF LA>0 THEN PRINT LEFT$(HP$,LA);
2030 RETURN
3000 PRINT TAB((WL-LEN(R$))/2);R$:RETURN
4000 FOR X=0 TO WL-1:IF X/4=INT(X/4) THEN PRINT CHR$(1
82);:GOTO 4020
4010 PRINT " ";
4020 NEXT X:RETURN
5000 DATA WRAP ON NONADHESIVE TAPE TO EGYPTIAN MUMMY.
5010 DATA SCREW IN XMAS LIGHTBULB TIGHTLY. PLACE UNDER
 PAIL AND TURN ON.
5020 DATA NOW OBTAIN GADGET ON TABLE AND TAPE.
5030 DATA TAKE HOLLOW ROD. EASE ENDS THROUGH HOLES IN
TANK.
5040 DATA NOW OPEN SANDBAG AND LET EMPTY.
5050 DATA NEXT OPEN POINTED END OF TABLE LEG. REMOVE F
LASH POWDER.
5060 DATA FOLLOW INSTRUCTIONS VERY EXACTLY. ADD CONDIM
ENTS TO PAIL AND SHAKE.
5070 DATA NAIL ONTO PLANK EGYPTIAN MUMMY.
5080 DATA FASTEN ONE UNCOVERED RINSED PAIL TO HOOK.
5090 DATA COVER AND NOTE TEMPERATURE.
5100 DATA NAIL ONTO TORSO ONE WOODEN LEG.
5110 DATA OVERTURN NEARBY EMPTY TANK.
5120 DATA OPEN OVAL PORTHOLE. SUSPEND WIRE WITH HOOK.
5130 DATA BUILD ANOTHER DUPLICATE LEG.
5140 DATA TWIST WIRE OVER ROD LEAVING HOOK DANGLING.
5150 DATA CFOPQ.>KA.CLOBJLPQRETMKO
5160 DATA VLR.PELRIA.HKLT+++FDEWOI
5170 DATA QEFKDP.>OB.PMBIIBA.LRQFDHTJH
5180 DATA %QELRDE.QEBV.ALK$Q.PELT&FSLKFD
5190 DATA >.MLM@LOK.J>@EFKBPSHMKF
5200 DATA FIRST,SECOND,THIRD,FOURTH,FIFTH,SIXTH
5210 DATA 40,120,240,600,720,800,840
```

TI-99/4A w/TI Extended BASIC/*Mystery Gadget*

```
10 DIM A$(27),A(15):: WL=28 :: P1=1 :: PF=0 :: C=0 ::
SP=5
20 FILM$=RPT$("F",16):: CALL CHAR(96,FILM$):: POP$="5E
FEF8FC317DFF66" :: CALL CHAR(100,POP$)
30 FOR X=1 TO 15 :: READ A$(X):: NEXT X
40 FOR X=16 TO 20 :: READ T$ :: FOR Y=1 TO LEN(T$)-6 :
: E=ASC(SEG$(T$,Y,1))+3
50 IF E=49 THEN E=32
60 A$(X)=A$(X)&CHR$(E):: NEXT Y :: NEXT X
70 FOR X=18 TO 23 :: AN(X-17)=ASC(SEG$(T$,X,1))-68 ::
NEXT X
80 FOR X=21 TO 26 :: READ A$(X):: NEXT X
90 A$(27)=" " :: FOR X=1 TO SP :: A$(27)=A$(27)&A$(27)
:: NEXT X
100 FOR X=0 TO 6 :: READ P(X):: NEXT X
110 CALL CLEAR :: ROW=0 :: R$="NOW PLAYING" :: GOSUB 3
000 :: R$="*MYSTERY GADGET*" :: GOSUB 3000
120 H=P(3):: GOSUB 2000 :: R$="ENTER INVENTORY TAG NUM
BER,"
130 IF C>=6 THEN R$=R$&" 'S' TO SOLVE,"
140 R$=R$&" OR 'Q' TO QUIT." :: GOSUB 1000
150 INPUT "-->":N$
160 IF SEG$(N$,1,1)="Q" THEN CALL CLEAR :: END
170 IF SEG$(N$,1,1)="S" THEN 310
180 IF N$<"1" OR N$>"9" THEN 110
190 N=VAL(N$):: IF N<1 OR N>15 THEN 150
200 C=C+1
210 CALL CLEAR :: H=P(0):: GOSUB 2000 :: GOSUB 4000 ::
 H=P(6):: GOSUB 2000 :: GOSUB 4000
220 H=P(1):: GOSUB 2000 :: R$="FRAME #"&N$ :: ROW=VE-1
 :: GOSUB 3000
230 H=P(5):: GOSUB 2000 :: R$="PLEASE PRESS ANY KEY" :
: ROW=VE-1 :: GOSUB 3000
240 H=P(2):: GOSUB 2000
250 COLUMN=LA+INT(WL/3)
260 FOR X=1 TO LEN(A$(N)):: DISPLAY AT(VE,COLUMN):SEG$
(A$(N),X,1)
270 IF SEG$(A$(N),X,1)=CHR$(32)THEN VE=VE+1 :: COLUMN=
LA+INT(WL/3):: GOTO 290
280 COLUMN=COLUMN+1
290 NEXT X
300 CALL KEY(0,K,S):: IF S=0 THEN 300 ELSE 110
310 CALL CLEAR :: FOR X=1 TO 6 :: DISPLAY AT(1,3):"*AS
SEMBLY INSTRUCTIONS*"
320 DISPLAY AT(23,1):"ENTER TAG NUMBER FOR..."
330 DISPLAY AT(24,1):A$(X+20)&" PROP";:: N$=""
340 CALL KEY(0,K,S):: IF S=0 THEN 340
350 IF K=13 THEN IF N$<>"" THEN 370 ELSE 340
360 N$=N$&CHR$(K):: DISPLAY AT(24,LEN(A$(X+20))+7+LEN(
N$)-1):CHR$(K):: GOTO 340
370 DISPLAY AT(22,1):A$(27):: DISPLAY AT(23,1):A$(27):
: IF N$<"1" OR N$>"9" THEN 330
380 RE(X)=VAL(N$):: IF RE(X)<1 OR RE(X)>15 THEN 330
390 IF X=1 THEN H=588 ELSE H=SV*WL
400 GOSUB 2000
410 PF=1
420 R$=TR$&A$(RE(X)):: GOSUB 1000 :: PF=0 :: NEXT X ::
 TR$=""
430 R$="PROCESSING..." :: ROW=22 :: GOSUB 3000 :: FOR
X=1 TO 24 :: PRINT :: NEXT X
440 CALL SOUND(4250,110,1)
450 FL=0 :: FOR X=1 TO 6 :: IF RE(X)<>AN(X)THEN FL=1
```

```
460 NEXT X :: IF FL=0 THEN 550
470 CALL CLEAR :: R$="BAD GUESS!" :: ROW=2 :: GOSUB 30
00
480 H=P(3):: GOSUB 2000 :: R$="AN INTERESTING IDEA, TH
OUGH!" :: GOSUB 1000
490 R$="PRESS 'H' FOR A HINT, OR ANY OTHER KEY TO CONT
INUE PLAY." :: GOSUB 1000
500 CALL KEY(0,K,S):: IF S=0 THEN 500 ELSE IF K<>72 TH
EN 110
510 CALL CLEAR :: R$="A LITTLE HINT..." :: ROW=1 :: GO
SUB 3000 :: H=P(2)
520 FOR X=16 TO 19 :: R$=A$(X):: GOSUB 2000 :: GOSUB 1
000 :: H=H+28 :: NEXT X
530 R$="PLEASE PRESS ANY KEY" :: ROW=12 :: GOSUB 3000
540 CALL KEY(0,K,S):: IF S=0 THEN 540 ELSE 110
550 CALL CLEAR :: CALL SCREEN(2):: FOR X=1 TO 9 :: CAL
L COLOR(X,16,2):: NEXT X :: H=P(0):: R$="WHAT'S THAT S
IZZLING SOUND?" :: GOSUB 1000
560 FOR X=1 TO 100 :: FOR D=1 TO INT(RND*2):: NEXT D :
: CALL SOUND(-100,-5,0):: NEXT X
570 CALL CLEAR :: FOR X=1 TO LEN(A$(20))
580 DISPLAY AT(1,X+(WL-LEN(A$(20)))/2):SEG$(A$(20),X,1
)
590 FOR S=1 TO INT(RND*50):: NEXT S :: CALL SOUND(-1,-
5,0)
600 NEXT X :: FOR X=200 TO 1 STEP -1 :: H=INT(RND*20)+
3 :: V=INT(RND*27)+1
610 CALL HCHAR(H,V,100,1):: CALL SOUND(X,-1,1)
620 FOR D=1 TO INT(RND*X):: NEXT D :: NEXT X
630 END
1000 J=0 :: IF LEN(R$)<WL THEN DISPLAY AT(VE,LA):R$ ::
 GOTO 1070
1010 FOR I=1 TO WL-1 :: IF SEG$(R$,I,1)=" " THEN J=I
1020 NEXT I
1030 IF J=0 THEN LA=1 :: IF PF=1 THEN PRINT :: GOTO 10
00 :: ELSE VE=VE+1 :: GOTO 1000
1040 DISPLAY AT(VE,LA):SEG$(R$,1,J):: R$=SEG$(R$,J+1,L
EN(R$)-(J-1)):: LA=1 :: IF PF=0 THEN VE=VE+1
1050 IF PF=1 THEN PRINT
1060 GOTO 1000
1070 SV=VE :: IF PF=0 THEN VE=VE+1
1080 RETURN
2000 VE=INT(H/WL):: LA=H-VE*WL+P1 :: RETURN
3000 ROW=ROW+1 :: DISPLAY AT(ROW,(WL-LEN(R$))/2):R$ ::
 RETURN
4000 FOR X=1 TO WL-1
4010 IF X/4=INT(X/4)THEN CALL HCHAR(VE,LA+X,96,1)ELSE
DISPLAY AT(VE,LA+X):" "
4020 NEXT X :: RETURN
5210 DATA 28,84,168,420,504,560,588
```

After you have typed in the above lines, add DATA lines 5000-5200 from the Commodore 64 version.

TRS-80 Model 4/*Mystery Gadget*

```
10 CLEAR 2000:DIM A$(27):WL=80:P1=0:PF=0:C=0:SP=6:PRIN
T CHR$(15)
20 FOR X=1 TO 15:READ A$(X):NEXT X
30 FOR X=16 TO 20:READ T$:FOR Y=1 TO LEN(T$)-6:E=ASC(M
ID$(T$,Y,1))+3
40 IF E=49 THEN E=32
50 A$(X)=A$(X)+CHR$(E):NEXT Y:NEXT X
60 FOR X=18 TO 23:AN(X-17)=ASC(MID$(T$,X,1))-68:NEXT X
70 FOR X=21 TO 26:READ A$(X):NEXT X
80 A$(27)=" ":FOR X=1 TO SP:A$(27)=A$(27)+A$(27):NEXT
X
90 FOR X=0 TO 6:READ P(X):NEXT X
100 CLS:R$="NOW PLAYING":GOSUB 3000:R$="*MYSTERY GADGE
T*":GOSUB 3000
110 H=P(3):GOSUB 2000:R$="ENTER INVENTORY TAG NUMBER,"
120 IF C>=6 THEN R$=R$+" 'S' TO SOLVE,"
130 R$=R$+" OR 'Q' TO QUIT.":GOSUB 1000
140 H=P(5):GOSUB 2000:PRINT "-->";:INPUT N$
150 H=P(5):GOSUB 2000:PRINT A$(27)
160 IF LEFT$(N$,1)="Q" THEN CLS:END
170 IF LEFT$(N$,1)="S" AND C>=6 THEN 290
180 IF N$<"1" OR N$>"9" THEN 140
190 N=VAL(N$):IF N<1 OR N>15 THEN 140
200 C=C+1
210 CLS:H=P(0):GOSUB 2000:GOSUB 4000:H=P(6):GOSUB 2000
:GOSUB 4000
220 H=P(1):GOSUB 2000:R$="FRAME #"+N$:GOSUB 3000
230 H=P(5):GOSUB 2000:R$="PLEASE PRESS ANY KEY":GOSUB
3000
240 H=P(2):GOSUB 2000:PRINT TAB(WL/3);
250 FOR X=1 TO LEN(A$(N)):PRINT MID$(A$(N),X,1);
260 IF MID$(A$(N),X,1)=" " THEN PRINT:PRINT TAB(WL/3);
270 NEXT X
280 K$=INKEY$:IF K$="" THEN 280 ELSE 100
290 CLS:R$="*ASSEMBLY INSTRUCTIONS*":GOSUB 3000
300 H=P(3):GOSUB 2000:R$="ENTER INVENTORY TAG NUMBER F
OR ...":GOSUB 1000
310 CR=2:FOR X=1 TO 6
320 H=P(4):GOSUB 2000:PRINT A$(X+20);" PROP";:INPUT N$
330 H=P(4):GOSUB 2000:PRINT A$(27):IF N$<"1" OR N$>"9"
 THEN 320
340 RE(X)=VAL(N$):IF RE(X)<1 OR RE(X)>15 THEN 320
350 H=CR*WL:GOSUB 2000:PF=1
360 R$=TR$+A$(RE(X)):GOSUB 1000:PF=0:NEXT X:TR$=""
370 H=P(3):GOSUB 2000:PRINT A$(27):H=P(5):GOSUB 2000
380 R$="PRESS ANY KEY":GOSUB 3000
390 K$=INKEY$:IF K$="" THEN 390
400 CLS:H=P(6):GOSUB 2000:R$="PROCESSING ...":GOSUB 30
00
410 FOR D=1 TO 25:PRINT:FOR S=1 TO 100:NEXT S:NEXT D
420 FL=0:FOR X=1 TO 6:IF RE(X)<>AN(X) THEN FL=1
430 NEXT X:IF FL=0 THEN 520
440 CLS:R$="BAD GUESS!":GOSUB 3000
450 H=P(3):GOSUB 2000:R$="AN INTERESTING IDEA, THOUGH!
":GOSUB 1000
460 R$="PRESS 'H' FOR HELP, OR ANY OTHER KEY TO CONTIN
UE PLAY.":GOSUB 1000
470 K$=INKEY$:IF K$="" THEN 470 ELSE IF K$<>"H" THEN 1
00
```


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WHAT'S IN STORE
SOFTWARE GUIDE

QUICK TAKES ON SOFTWARE— NEW AND NOTEWORTHY

Welcome to FAMILY COMPUTING's Software Guide, the most comprehensive listing available of two dozen of the newest, most noteworthy and/or best programs on the market. Our reviewers include families from all over the country who have judged the software according to the following criteria: long-term benefits and applications, adaptability, and advantages of using a computer for a given task. Programs have been evaluated and rated for their performance in each of the categories listed below. More detailed reviews follow the chart.

Here's a rundown of the rating categories and what they mean: **O** = Overall performance, and refers to the software's performance given the limitations and capacities of the particular computer for which it is intended; **D** = Documentation, or the instructions and literature that accompany a program; **EH** = Error-handling, the software's capacity to accommodate errors made by the user—an especially important consideration with software for younger users; **GQ** = Graphics quality, also evaluated in light of each particular brand's graphics capabilities; **EU** = Ease of use after the initial learning period, which varies from computer to computer; **V** = Value for money, or how the software measures up to its price.

HOME BUSINESS/HOME MANAGEMENT

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
CUT & PASTE Electronic Arts 2755 Campus Dr. San Mateo, CA 94403 (415) 571-7171 $50 © 1983	Take care of formal correspondence, homework assignments, and other word-processing tasks in easy-to-use, simple package with logical command structure best for occasional use.† —AKER	Commodore 64 (disk). Also available for Apple II/II plus/IIe, 48K (disk); Atari 400/800/XL series, 48K (disk). Versions planned for IBM PC and PC*jr*.	Defective disks replaced free w/in 90 days; $7.50 fee thereafter or if user-damaged.	★ ★ ★ ★	★ ★	★ ★	n/a	A	★ ★ ★ ★
INSTA-WRITER Cimarron Software Microsci Corp. 2158 S. Hathaway St. Santa Ana, CA 92705 (714) 241-5600 $51.95 © 1983	Word process correspondence and reports with cartridge-based program that lacks sophistication but will be a hit among Commodore owners who have data-cassettes instead of disk drives. —ODISIO	Commodore 64 (cartridge).	No returns, no backup policy.	★ ★ ★	★ ★	★ ★ ★	n/a	A	★ ★ ★ ★
MICROSOFT MULTIPLAN HesWare 150 N. Hill Dr. Brisbane, CA 94005 (800) 624-2442 $99.95 © 1983	Plan budgets, track costs and revenues, analyze data, manipulate figures with powerful electronic spreadsheet. A ledger-page-like program best-suited for small business or other heavy-duty applications.† —AKER	Commodore 64 (disk).	Defective disks replaced free w/in 6 months; $5 fee if user-damaged or for backup copy.	★ ★ ★ ★	★ ★ ★	★ ★ ★	n/a	A	★ ★ ★ ★
PRACTICAL ACCOUNTANT Softlink 3255–2 Scott Blvd. Santa Clara, CA 95051 (800) 633-6300 $149.95 © 1983	Keep track of family or small-business finances with package featuring as many as 50 different expense categories and especially comprehensive tutorial and documentation. —WILSON	Apple II/II plus/IIe, 64K (disk; needs 2 disk drives). Also available for IBM PC/PC*jr*, 128K (disk).	Defective disks replaced free w/in 30 days; $15 fee thereafter; user makes backup copy.	★ ★ ★	★ ★ ★ ★	★ ★ ★	n/a	A	★ ★
SUPER-TEXT PROFESSIONAL Muse Software 347 N. Charles St. Baltimore, MD 21201 (301) 659-7212 $175 (Apple and IBM) $99 (Commodore) © 1983	Create reports and incorporate mathematical calculations into text with powerful word-processing package most appropriate for heavy, semiprofessional use.† —WILSON	Apple II w/Applesoft ROM/II plus/IIe, 48K (disk). Also available for Commodore 64 (disk); IBM PC, 128K (disk). Version planned for Atari.	Defective disks replaced free; backup copy included; $10 fee if user-damaged.	★ ★ ★	★ ★ ★	★ ★ ★	n/a	A	★ ★ ★

RATINGS KEY **O** Overall performance; **D** Documentation; **EH** Error-handling; **GQ** Graphics quality; **EU** Ease of use; **V** Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★★ Excellent; n/a Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

SOFTWARE GUIDE

EDUCATION/FUN LEARNING

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
ALLIGATOR MIX Developmental Learning Materials One DLM Park Allen, TX 75002 (800) 527-4747 $34 © 1983	Kids in first through third grade math levels drill and practice basic addition and subtraction in arcade-style game that tests three degrees of skill at nine speeds. —HIRTE	Apple II/II plus/IIe, 48K (disk). Also available for Atari 400/800/XL series, 48K (disk); Commodore 64 (disk); IBM PC, 64K (disk); TI-99/4A (cartridge).	Defective material replaced free w/in 6 months; $25 fee thereafter or for backup copy.	★ ★ ★	★ ★ ★	★ ★	★ ★ ★	E	★ ★ ★
I AM THE C-64, VOLS. 1–6 Creative Software 230 E. Caribbean Dr. Sunnyvale, CA 94089 (408) 745-1655 $29.95 (Vols. 1–6) © 1983	New Commodore 64 owners familiarize themselves with the machine's capabilities, learning about the keyboard and elementary BASIC programming.† —BYRNE	Commodore 64 (disk).	Defective or user-damaged disks replaced free w/in 90 days.	★ ★ ★	★ ★ ★	★ ★	★ ★ ★	E	★ ★ ★
MATCH-WITS CBS Software One Fawcett Place Greenwich, CT 06836 (203) 622-2525 $29.95 © 1983	The whole family can match corresponding pairs in Concentration-like game that tests knowledge in subjects such as cities, famous people, or ones you create yourself. —MORRIS	Apple II plus/IIe, 48K (disk). Also available for Commodore 64 (disk); IBM PC/PC*jr*, 64K (DOS 1.1 disk); 128K (other DOS disks). IBM requires color card.	Defective or user-damaged disks replaced free w/in 90 days; $5 fee thereafter.	★ ★	★ ★	★ ★ ★	★ ★	A	★ ★
M–SS–NG L–NKS Sunburst Education 39 Washington Ave., Room AB Pleasantville, NY 10570 (800) 431-6616 $39.95 © 1983	Kids ages 9+ learn verbal skills (reading comprehension, spelling, sentence structure) and the characteristics of verbal communication by filling in missing letters in words of passages taken from classic and popular contemporary children's literature. † —MORRIS	Apple II/II plus/IIe, 48K (disk). Also available for Atari 400/800/XL series, 48K (disk); IBM PC, 64K (DOS 1.0 or 1.1 disk); 128K (DOS 2.0 disk); TRS-80 Models I/III/4, 48K (disk).	Defective disks replaced free w/in 90 days.	★ ★ ★	★ ★	★ ★ ★	n/a	E	★ ★
MUSIC EDUCATOR I Timex Computer Corp. P.O. Box 2655 Waterbury, CT 06720 (800) 248-4639 $9.95 © 1983	Newcomers to music are introduced to the basics: Notes on the treble clef, 4/4 time, and elementary notation. Simple program includes tests, takes maximum advantage of the TS's limited capabilities. —ROBERTS	TS 1000/1500, 16K (cassette).	Defective cassettes replaced free.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★	E	★ ★ ★
STORY TREE Scholastic/Wizware 730 Broadway New York, NY 10003 (212) 505-3000 $39.95 © 1984	Children ages 12+ create their own interactive branching stories, making up plots with different endings and practicing writing skills in package best-suited to more verbally inclined kids (and adults). † —MORRIS	Apple II w/Applesoft ROM/II plus/IIe, 48K (disk).	Defective disks replaced free w/in 60 days; $10 fee for 10 months thereafter.	★ ★ ★	★ ★ ★	★ ★ ★ ★	n/a	A	★ ★ ★ ★
THAT'S MY STORY Learning Well 200 S. Service Rd. Roslyn Heights, NY 11577 (800) 645-6564 $59.95 © 1983	Kids age 7+ build on preprogrammed stories or write their own with easy-to-use creative writing package that uses a "What if . . .?" format for plot twists and branches. Best for kids and adults who like to write. † —MORRIS	Apple II/II plus/IIe, 48K (disk).	Defective disks replaced free w/in 6 months; $20 fee thereafter.	★ ★ ★ ★	★ ★ ★	★ ★ ★ ★	n/a	E	★ ★ ★
VERB VIPER Developmental Learning Materials One DLM Park Allen, TX 75002 (800) 527-4747 $34 © 1983	Kids match verbs and subjects in entertaining drill-and-practice, arcade-style game with nine different speeds, four difficulty levels, and the option to test different kinds of verbs. —HIRTE	Apple II/II plus/IIe, 48K (disk). Versions planned for Atari, Commodore 64, IBM.	Defective disks replaced free w/in 6 months; $25 fee thereafter or for backup copy.	★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★	E	★ ★ ★
WIZARD OF WORDS Advanced Ideas Inc. 2550 Ninth St., Suite 104 Berkeley, CA 94710 (415) 526-9100 $39.95 © 1983	Kids ages 7–13 and word lovers of any age practice spelling, logic, and reasoning skills in series of five fun word games. Program includes option to make up your own word lists for use in two games. † —BUMGARNER	Apple II/II plus/IIe, 48K (disk). Also available for Commodore 64 (disk); IBM PC, 128K (disk). IBM PC requires color card.	Defective or user-damaged disks replaced free w/in 1 year; backup copy available free.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	E	★ ★ ★ ★

RATINGS KEY O Overall performance; D Documentation; EH Error-handling; GQ Graphics quality; EU Ease of use; V Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★★ Excellent; n/a Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

GAMES

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
BRISTLES First Star Software, Inc. 22 E. 41st St. New York, NY 10017 (212) 532-4666 $29.95 © 1983	Paint the rooms of a house while avoiding obstacles in easy-to-learn, amusing arcade game with six skill levels. A charmer for ages 10+. —DELSON	Atari 400/800/XL series, 32K (disk), 16K (cartridge and cassette). Also for Commodore 64 (disk, cartridge, and cassette). Joystick(s) required.	Defective material replaced free w/in 90 days; $9 fee thereafter.	★ ★ ★	★ ★	★ ★	★ ★	E	★ ★ ★
DINO EGGS Micro Fun 2699 Skokie Valley Rd. Highland Park, IL 60635 (312) 433-7550 $40 (Apple) $35 (Commodore) © 1983	Rescue baby dinosaurs from contamination as you evade prehistoric creatures and the Dino Mom's dangerous footfalls in challenging arcade game good for ages 9+. —DELSON	Apple II/II plus/IIe, 48K (disk). Also available for Commodore 64 (disk). Versions planned for Atari, IBM PC/PC*jr*.	Defective disks replaced free w/in 30 days; $5 fee thereafter.	★ ★ ★	★ ★	★ ★	★ ★	A	★ ★
GALACTIC ATTACK Sir-tech Software, Inc. 6 Main St. Ogdensburg, NY 13669 (315) 393-6633 $29.95 © 1981	Shoot it out with enemy spacecraft in exciting strategy arcade game, a challenge for ages 12+. Flexible play system keeps action varied, game fresh. —DELSON	Apple II/II plus/IIe/III w/ emulator, 48K (disk).	Disks replaced free w/in 30 days; $5 fee thereafter; backup copy included.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★	A	★ ★ ★ ★
JULIUS ERVING AND LARRY BIRD GO ONE-ON-ONE Electronic Arts 2755 Campus Dr. San Mateo, CA 94403 (415) 571-7171 $40 © 1983	Play computer or friend as Dr. J or Larry Bird in first-rate basketball simulation featuring fast action, four play levels, player fatigue, and hot streaks. Excellent challenge for ages 10+; requires practice. —DELSON	Apple II/II plus/IIe, 48K (disk). Also available for Commodore 64 (disk). Joystick required. Versions planned for Atari, IBM PC.	Defective disks replaced free w/in 90 days; $7.50 fee thereafter or if user-damaged.	★ ★ ★ ★	★ ★ ★	★ ★	★ ★ ★	A	★ ★ ★
NECROMANCER Synapse Software 5221 Central Ave. Richmond, CA 94804 (415) 527-7751 $34.95 © 1983	Plant and protect trees, then march them into enemy territory and take on opposing forces in fantasy arcade game requiring superior hand-eye coordination, for ages 12+. —DELSON	Atari 400/800/XL series, 32K (disk or cassette). Also available for Commodore 64 (disk or cassette). Joystick required.	Defective material replaced free w/in 90 days; $5 fee thereafter or if user-damaged.	★ ★ ★	★ ★ ★	★ ★	★ ★	D	★ ★ ★
OIL BARONS Epyx, Inc. 1043 Kiel Ct. Sunnyvale, CA 94089 (408) 745-0700 Approx. $40 © 1983	Wheel and deal, form cartels, outbid the competition, in serious, slow-moving, challenging, resource-management game for ages 12+.† —DELSON	IBM PC, 64K w/advanced BASIC (disk). Also available for Apple II/II plus/IIe, 48K (disk); Commodore 64 (disk).	Defective disks replaced free w/in 30 days; $5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★	★ ★	D	★ ★ ★
PARTHIAN KINGS Avalon Hill Game Co. 4517 Harford Rd. Baltimore, MD 21214 (301) 254-5300 $25 © 1983	As a king you build up an army, engage in combat, make and break alliances, use magic, acquire land for points and gain victory over up to three foes in war game for ages 12+.†—DELSON	Apple II/II plus/IIe, 48K (disk). Version planned for Commodore 64.	Defective disks replaced free.	★ ★ ★	★ ★ ★	★ ★	★ ★	A	★ ★ ★ ★
PROFESSIONAL TOUR GOLF Strategic Simulations, Inc. 883 Stierlin Rd., Bldg. A-200 Mountain View, CA 94043 (415) 964-1353 $39.95 © 1983	Drive, chip, and putt across two golf courses composed of the world's greatest holes. Use one of 20 real-life golf greats or create your own player with strengths and weaknesses.† —DELSON	Apple II/II plus/IIe/III w/ emulator, 48K (disk). Also available for Commodore 64 (disk).	Defective disks replaced free w/in 30 days; $10 fee thereafter or for backup copy.	★ ★ ★	★ ★ ★ ★	★ ★ ★	★ ★	A	★ ★
ROCKY Coleco Industries, Inc. 999 Quaker Lane S. West Hartford, CT 06110 (800) 842-1225 Approx. $30 © 1984	Take on human or computerized opponent in fast-action boxing match featuring variable skill levels and fluid graphics. Good for ages 10+. —DELSON	Coleco ADAM (cartridge). ColecoVision Super Action Controller(s) required.	Defective cartridges replaced free w/in 90 days.	★ ★ ★	★ ★	★ ★	★ ★	A	★ ★
SUBMARINE COMMANDER Thorn EMI 1370 Ave. of the Americas New York, NY 10019 (212) 977-8990 $19.95; $29.95 (Apple) $44.95 (Atari) © 1983	Track and follow enemy convoys, use special sonar, and torpedo enemy ships in exciting submarine simulation game popular among players 10+.† —DELSON	Commodore VIC-20, 5K (cartridge). Also available for Apple II/II plus/IIe, 48K (disk); Atari 400/800/XL series, 16K (cartridge).	Defective material replaced through retailer.	★ ★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★

RATINGS KEY **O** Overall performance; **D** Documentation; **EH** Error handling; **GQ** Graphics quality; **EU** Ease of use; **V** Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★★ Excellent; n/a Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

WHAT'S IN STORE
SOFTWARE REVIEWS

On the following pages, you'll find in-depth reviews of some of the programs listed in the Software Guide. Refer back to the Guide on page 100 for information such as backup policies and addresses of software manufacturers.

HOME BUSINESS & HOME MANAGEMENT

Cut & Paste

HARDWARE REQUIREMENTS: Commodore 64 (disk). Also for Apple and Atari. Version planned for IBM PC.
MANUFACTURER: Electronic Arts
PRICE: $50

What's the use of a personal computer at home? A question we all ask ourselves. Word processing! The answer we get as a matter of course. You may not be composing the Great American Novel on it, but, if you're like a lot of people, you'll find the computer comes in handy for occasional formal correspondence. And term papers will never look the same again.

You may be hesitant to invest hundreds of dollars and weeks of time on a word-processing program. Under the circumstances, you'll find Electronic Arts' first nongame offering a most satisfying tool. *Cut & Paste* comes with an extra disk you can use to store your writing. You can start typing in your letters and homework right away. This disk also has a series of generic formats for documents like memos and business letters. I know this is a friendly, instructive gesture, designed to help you put your program to work immediately, but I found it rather confusing. If you want to enter your own text instead of following the form letter or form memo, you must load the special "blank" document. If it weren't for the command summary card, I'd have been lost.

As always, perseverance pays off. Whatever you do, don't give up. It'll take only a few moments of experimenting and perhaps a lost letter or two before you feel comfortable with a command structure that makes refreshingly good sense. A list of your options is always printed on the bottom of the screen. And there are no commands to remember. Simply move the cursor over the task you want to perform—SAVE, PRINT, CUT (also known as delete), PASTE (also known as insert), etc. and press RETURN.

Word processors will help with schoolwork. They'll help you compose neat, impressive letters with which to elegantly excuse yourself on late mortage payments, or forcefully convey your anger to a local elected official. *Cut & Paste* doesn't have a fancy spelling checker, or slick and complicated features that allow you to call up some phrase or sentence with the push of a CONTROL key. But these are rarely needed for most home uses. Their absence is one of the reasons for the program's delightful simplicity.

—SHARON ZARDETTO AKER

Microsoft Multiplan

HARDWARE REQUIREMENTS: Commodore 64 (disk).
MANUFACTURER: HesWare
PRICE: $99.95

More often than not, after an hour or two with a new business or finance program you begin to think of all the shortcomings: "If only they had included . . . ." Not so with *Multiplan*: It's a serious spreadsheet program (also known as an electronic worksheet) that includes every feature I could think of as being useful for small business or big home-finance-management tasks.

A spreadsheet program's an invaluable tool in accounting, budget preparation, and finance management. *Multiplan* can handle any kind of data you want to store in row/column format, as you would on an accountant's ledger page. The real advantage of these kinds of programs is in the manipulative and "what if . . . " power you have over the information stored. You can have the computer automatically switch numbers around, rearrange calculations, calculate averages and sums, and pick out maximum and minimum values for certain categories. Find out how the entire spreadsheet would be affected if you changed an item. For instance, suppose you wanted to calculate your average annual income, accounting for mortage payments on your home. You can easily calculate the effect of variations in the mortage rate on your income provided you have included a formula taking it into account.

The 400-plus page *Multiplan* manual has to be that large to describe all the features of this tremendously powerful program. Electronic work sheets like *Multiplan* are extremely versatile, but it takes a lot of work to set one up. Since home budgets, checkbooks, and even bowling league statistics are basically no more than simplified spreadsheets, *Multiplan* does have its home applications. However, its power (not to mention its 422-page manual), makes it most appropriate for business use.

—SHARON ZARDETTO AKER

Super-Text Professional

HARDWARE REQUIREMENTS: Apple II w/ Applesoft ROM/II plus/IIe, 48K (disk); Also for Commodore 64 and IBM PC. Atari version planned.
MANUFACTURER: Muse Software
PRICE: $175 (Apple and IBM), $99 (Commodore)

Super-Text has all the essentials. You can move, edit, copy, and delete blocks of your copy. Words that split at the end of a line automatically flip down to the next line. It's also laden with the fancy features you'd except from a more expensive word-processing system. It lets you assign words, numbers, and any sequence of characters to one key. When you want that word, number, or phrase to appear simply hit the ":" key. You can also calculate totals, and add, multiply, and divide numbers within the body of your text—an especially handy feature if you're preparing business reports. When your text exceeds the space limit (about five double-spaced pages per file), you can link it up with other saved files, thanks to a procedure called AUTOLINK. At any time, you can switch to a special HELP screen that will guide you out of confusions or frustrations.

Of course, with all this power, there are bound to be a few problems. You may have to struggle with the documentation, which lacks a comprehensive index, tutorial, and clear command summary. The complexity of the program means that there are a lot of commands to remember.

Potential word-processing program purchasers should look carefully at their needs. If you're in the market for a package that will take care of a letter or two and prepare neat homework assignments, you'll find less-expensive programs that are significantly easier to use. On the other hand, if you're in the market for a more professional job, *Super-Text* deserves consideration. ►

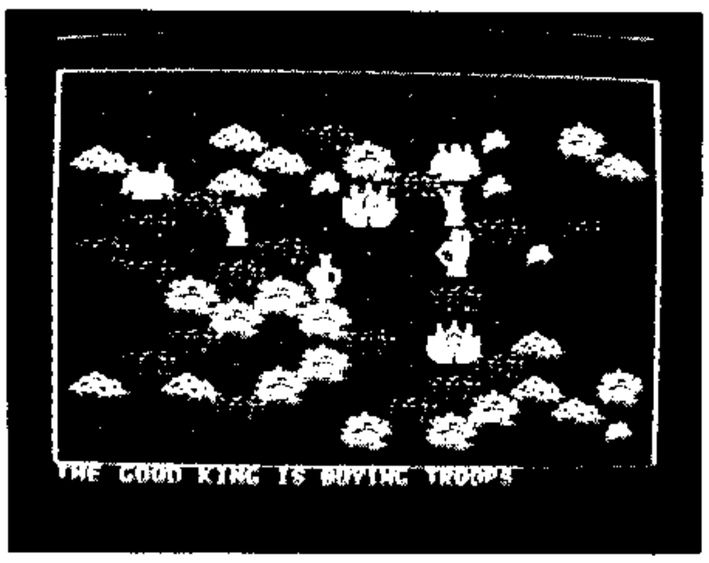
WHAT'S IN STORE
SOFTWARE REVIEWS

each club. That way, contestants learned from their mistakes. After several practice games they were able to judge distances and play more smoothly and properly.

—JAMES DELSON

Parthian Kings

HARDWARE REQUIREMENTS: Apple II/II plus/IIe, 48K (disk). Version planned for Commodore 64.
MANUFACTURER: Avalon Hill Game Co.
PRICE: $25



Ruling in the Middle Ages was no picnic. Armies roamed the countryside, plundering at will. Wizards cast spells, defoliating forests. Peasants demanded food and grumbled about taxes when all they'd done was grow and harvest a few crops. I mean, what was a local king supposed to do? Well now you can play Avalon Hill's exciting simulation of medieval life and warfare, *Parthian Kings*, and decide for yourself. You set all the parameters of this war game—from choosing the size and strength of your army to creating the terrain for the computer-generated map on which you play. It's one of the most flexible systems around, and makes for one of the year's most intriguing games.

First off, you determine what sort of soldiers you want in an army (you should store this configuration on a duplicate disk). Next, decide whether to use an existing map created by the computer or devise one of your own. You have a choice of a variety of terrains and may play against up to three opponents (human or computer-generated). Magic's even allowed, if you wish.

In each turn you can build up your army and/or move your pieces, make (and break) alliances with other players, and engage in combat. You accumulate points by eliminating opponents' kings, wizards, and convoy masters, and by occupying lake spaces (also known as hexes). Victory goes to the player with the most points at the game's end.

This is a simple game, but one that grows in complexity as you gain experience. Younger playtesters ages 12 and up took it on its most basic level, while older testers engaged in some fancy political double-crossing and double-dealing.

—JAMES DELSON

Oil Barons

HARDWARE REQUIREMENTS: IBM PC, 64K with advanced BASIC (disk). Also for Apple and Commodore 64.
MANUFACTURER: Epyx, Inc.
PRICE: Approx. $40

If you've ever dreamed of wheeling and dealing in the marketplace, you'll enjoy this action-packed simulation of the petroleum industry. Buy land, survey your property, drill for black gold, and maybe even strike it rich, all in the comfort of your living room. The computer acts as your banker, secretary, and personal advisor while you struggle for supremacy in the world of big business.

Like other money and resource management games, such as *Cartels and Cutthroats* and *President Elect*, *Oil Barons* will take you several hours to learn. It requires careful reading of the lengthy instruction manual and several practice games. But once you get the hang of it, it's as easy, and as much fun as Monopoly or Careers, with all the features that computer games offer, as well. For instance, the computer helps keep track of resources and computations, and adds an element of surprise in such areas as political maneuverings and the size of each oil strike. Animated graphics depict the surveying and drilling process and enhance the game's appeal.

Play alone or against as many as seven other entrepreneurs, trying to accumulate money and land while outbidding and duping your rivals. Shady deals, powerful cartels, and high-risk business dealings are all allowed.

Playtesters over 12 found the game enjoyable, though some complained of it being too slow-moving. I can't recommend *Oil Barons* for all players. Though arcade fans and quick-thrill seekers will be disappointed, it'll appeal to those who enjoy involved buying and selling strategies and offers insights into the business as well as years of challenging play.

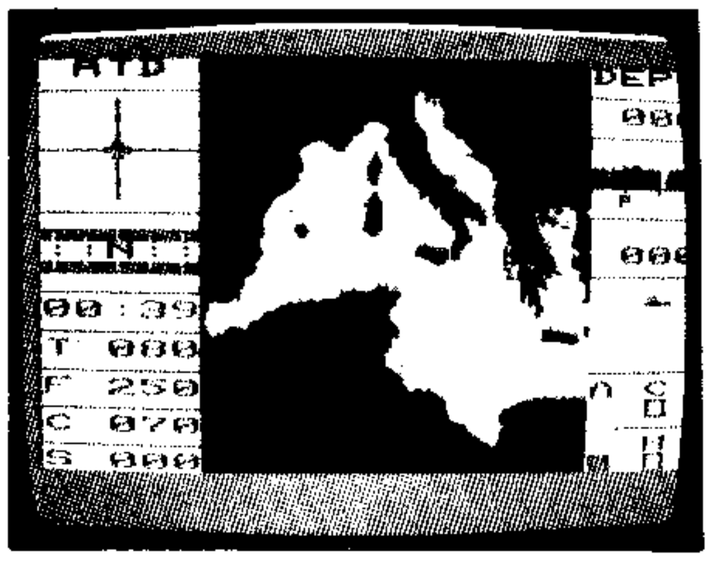
—JAMES DELSON

Submarine Commander

HARDWARE REQUIREMENTS: Commodore VIC-20, 5K (cartridge). Also for Apple and Atari.
MANUFACTURER: Thorn EMI
PRICE: $19.95 (VIC-20), $29.95 (Apple), $44.95 (Atari)

I've always liked those World War II submarine movies, like *The Enemy Below* and *Run Silent, Run Deep*. Like the lone air aces during the Battle of Britain, sub crews were a rare breed. This thrilling, sophisticated simulation puts you inside a sub on patrol in the Mediterranean Sea during the Second World War. You track and follow enemy convoys on a master map, locate ships using sonar and hydrophone displays (on a second screen), and engage and sink ships by spotting them through your periscope (a third screen).

The enemy fires back, with deck guns and depth charges, inflicting damage on your controls, instruments, hull, and engines. If you're daring, you can dodge in amongst a convoy, sink a few ships, then crash dive to escape destruction. The more strategic-minded can follow a convoy and pick off ships on its periphery. Regardless of your approach, this is an exciting game, with tense moments as you approach battle, scan the water for targets, and watch your torpedoes speed off to hit (or miss) their targets.



By far the best-received game of the month, *Submarine Commander* is fast-paced and requires only moderate hand-eye coordination. It was popular among all playtesters over 10, including two groups who operated as teams—one player acting as navigator, another as "crew," steering the ship, diving, and submerging it, and a third who decided when to fire the torpedoes. The VIC-20 game was much faster than the Atari version, though a little hard to fine-tune.

—JAMES DELSON

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