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VOLUME 4
NUMBER 8

GREAT \$25 AND UNDER PROGRAMS

FAMILY COMPUTING

Writing With Computers Part 1:

How to Find the Right Word Processor for Your Needs

Why I Love My...



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High-Power Machines



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and Hardware
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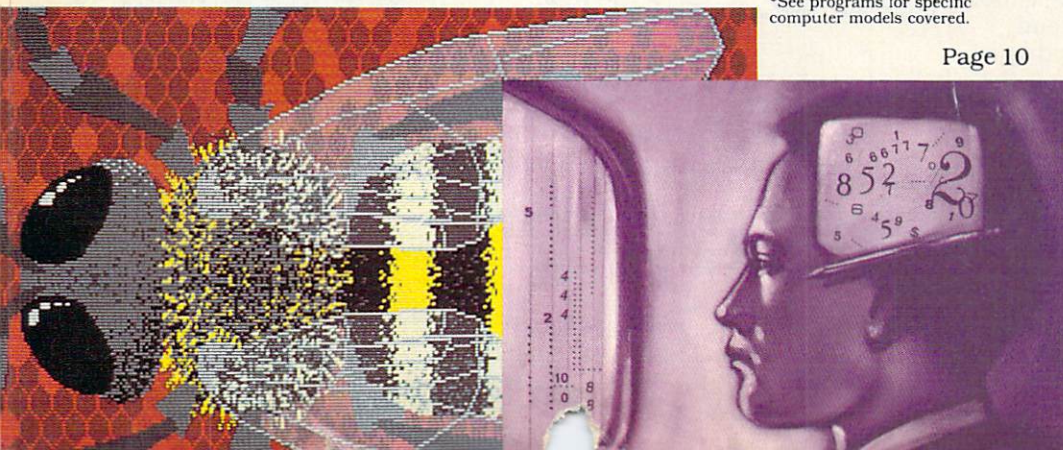
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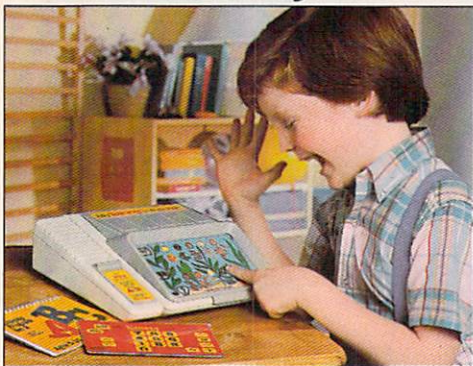
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Play and Learn

Electronics

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*Clock sold separately.

CIRCLE READER SERVICE 8

LETTERS

COMPUTERIZING A BUSINESS

We have a secretarial and employment agency called Secretaries Unlimited. Our business is approximately 1½ years old now, and we have been trying to get financing for a 10 Mb IBM XT. We currently use a Commodore 64.

FAMILY COMPUTING has been very informative and helpful in starting our business. It has helped us choose the software (writing, planning, spell checking and home finance programs) and hardware (disk drives, Okidata 192 printer, and KoalaPad) to use our C64 to its fullest. We are going to continue to subscribe for years to come!

MARK AND SHERRI SMITH
Bellingham, Washington

WAIT! THE NEW 128'S GREAT!

I have long been a happy Commodore 64 user, but now I am looking forward to purchasing the new 128. After reading the "Buyer's Guide to Personal Computers" (June 1986), and specifically the review of the 128, I was greatly displeased.

You did mention the CP/M mode, one of the 128's most powerful features, but it can do a lot more than "run some old CP/M software," as you stated.

I believe you also made a mistake in saying that Commodore has failed to introduce the long-awaited *Jane* program.

Commodore has made the 128 compatible with some of the best software available, and a lot of it is even in the public domain.

BRICE REMAIEV
Emmaus, Pennsylvania

FLIPPING OVER PRINTMASTER

This quote from "Soup Up Your Software" in the June issue of FAMILY COMPUTING really caught my attention: "Apple users can load images from the flipside of the IBM-version *PrintMaster Art Gallery* disk into their edition of *The Print Shop*."

Does this mean that if I want to load images from *PrintMaster* into my Apple IIc computer and my Apple II version of *The Print Shop* program, I should buy the IBM version of the *PrintMaster* program?

Other than being confused by this one sentence, I really enjoy FAMILY COMPUTING! Thank you for a great magazine.

CHRISTOPHER T. CONNELL
Brick, New Jersey

Editor's Note: Both the IBM and Apple versions of The PrintMaster Art Gallery clip-art are on one disk. The IBM side of the clip art works with PrintMaster, and the Apple side works with The Print Shop. Sorry for the confusion.

GETTING WITH THE PROGRAM

I have been reading your magazine for over a year now, and I appreciate the reviews, adventure game hints, articles, and short programs. However, I can rarely find time to type in the long programs in the Programmer section. It seems the two pages spent just explaining some of the programs and the several pages of program listings could be spent more wisely for some other, more broad purpose.

EDWARD WATERS
Delmar, New York

After several months of trying to do without FAMILY COMPUTING, I have decided to renew my subscription. I find that I look forward with pleasure to receiving the useful and interesting programs and programming tips in each month's issue. I also generally enjoy keeping current on the developments in microcomputing.

JEFFREY D. HOEPER
Jonesboro, Arkansas

SEARCHING FOR COCO PROGRAMS

I am a new subscriber to your magazine. The absolute wealth of programs of all types for various computers is truly amazing. I have recently purchased a Tandy Color Computer. Of course, after reading some of the reviews of gaming software in your magazine, I was excited about getting some for myself. Unfortunately, every software house that I contacted seemed to treat me like some kind of eccentric hermit. Is this because the Color Computer is somewhere out in left field regard-

ing hardware or software?

Should I consider my purchase as just a learning experience and start looking for an IBM or Apple system? Please help.

RON WINFREY
San Bernardino, California

Editor's Note: When the CoCo software you want is hard to find, go to where you bought your computer. At any Radio Shack, you will find the Radio Shack Software Reference and Tandy Computer Guide, a catalog of all software and hardware the stores carry for Tandy computers. If the products aren't in stock, they can be ordered quickly.

CHAMPIONSHIP BOXING'S A KNOCKOUT

I read with great interest the review of *Championship Boxing* in the May issue. I was surprised that the graphics were rated "barely acceptable" for the Commodore version. I have played the IBM PC and the Macintosh versions, and consider the graphics excellent. I checked out the Commodore version recently and agree with the reviewer's assessment. It's unfortunate that the IBM or the Mac version wasn't tested. They are far superior to the C 64/128 version, especially with respect to graphics.

PAUL LONGCRIER
Olympia, Washington

HARMONIZING WITH COMPUTERS

Can you please give me information on computers and musical keyboards (especially Casio). I am interested in the best computers and software to use with these keyboards.

DEREK DUNCAN
Morganfield, Kentucky

Editor's Note: You'll find plenty of information on making music with computers in this month's "Buyer's Guide to Music Hardware and Software" on page 36.

FAMILY COMPUTING looks forward to letters from all our readers. Please direct your correspondence to: Letters to the Editor, FAMILY COMPUTING, 730 Broadway, New York, NY 10003. Include your name, address, and telephone number. We reserve the right to edit letters for length and clarity.

Upcoming Features in FAMILY COMPUTING

Announcing: FAMILY COMPUTING's Family of the Year Contest Winners

Guide to Writing with Computers, Part II: Word-Processing Add-Ons

Back-to-School Computing Special

Entertainment: What You Can Learn by Having Fun

New Hardware Announcements

PLUS: Original Word Puzzle, Music and Game Programs

September Issue On Sale at Your Newsstand August 19

When you make a better learning toy, it speaks for itself.



WOMAN (right) This is Speak 'n' Spell. It teaches kids to spell.

WOMAN (left) This is the Talking Teacher™ learning system. It also teaches kids to spell.

WOMAN (right) This one's been around for a long time. And it speaks.

WOMAN (left) Talking Teacher™ speaks too—and so much more clearly. The Talking Teacher™ learning system also helps your child learn math.

WOMAN (right) Math?

WOMAN (left) Yes. Math and spelling and it doesn't cost more.

Talking Teacher™

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COLECO
Play and Learn

Electronics

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Dial M For

MAIL ORDER BUYING

IF YOU KNOW WHAT YOU WANT,
MAIL ORDER BUYING CAN SAVE YOU
TIME, MONEY, AND EFFORT

BY DAN GUTMAN

Planning to buy a computer system for the family this year? At Computer Factory in New York City, you could get a nice system—an Apple II computer, a monochrome monitor, and an ImageWriter II printer.

Price—\$1,300.

Or, you could buy the exact same system by mail from 47th Street Computer ([800] 221-7774), also based in New York City.

Price—\$1,099. You save \$201.

Looking for Lotus 1-2-3 to do office work at home? When we called ComputerLand, it was on sale.

Price—\$375.

On the same day, the same program was available from a mail-order company.

DAN GUTMAN, who lives in New York, writes a syndicated newspaper column on computers.

Price—\$309. You save \$66.

Need ribbons for your Commodore 801 printer? You could look for them in K-Mart where you bought the printer, but you won't find them there anymore. You can get them from a mail-order house called Protecto Enterprises ([312] 382-5244), which, in addition to computers, stocks a wide variety of peripherals—even speech synthesizers and out-of-production items that aren't available in stores.

Big savings is the main reason why so many people now buy computer hardware and software through the mail. Mail order prices are 15% to 50% below store prices. "At electronics stores you pay an arm and a leg," says Al Muick of Laton, Oklahoma, who ordered a power sup-

ply for a disk drive from Jameco Electronics ([415] 592-8097). "If you buy from a mail order company that specializes in the product you're ordering, you're going to get a better deal than buying from 'Joe Distributor' down the road."

Besides price, convenience is another reason to buy mail order—especially for people who live in rural areas and aren't close to computer outlets. People looking for out-of-stock products may find that mail order often presents a wider selection of goods than computer stores, which stock primarily best-sellers or new products that are heavily advertised. And people who own computers no longer in production—e.g., the TI 99/4A, IBM PCjr, and Coleco Adam—often have no choice but to buy through the mail.

Mail order used to be considered a shady business that smart consumers would avoid. Today, with the rise of big catalog houses, such as L.L. Bean, Lands End, Williams-Sonoma, and many others, buying consumer goods through the mail is mainstream.

The computer mail-order phenomenon is part of this trend. Note that 81% of FAMILY COMPUTING readers have bought a product by mail or phone over the last 12 months, according to a study by Simmons Market Research Bureau, a large New York media research firm. One year ago, the figure was 73%.

You can buy just about any computer equipment by mail order: business software, productivity and learning software, games, accessories, and even full computer systems. In fact, many manufacturers of the new PC-compatible computers, such as PC USA, Mainstreet, PC Connection, and PC Designs, sell by mail only.

As long as you know what you want, accessories such as printer ribbons, dust covers, and computer paper are naturals for mail ordering. In fact, buying such commodities by mail is a good way to get your feet wet. You can't go too far wrong, and you'll save time and money.

MAIL ORDER SECRET #1

How do mail order firms do it? The number one secret is quantity. "A computer store can only afford to buy a few units at a time, but we buy 200," says K. Chuck Doran of Computer Mail Order ([800] 233-8950). The company, located in Williamsport, Pennsylvania, stocks more than 7,000 computer-related items. Mail-order firms sometimes buy stock directly from the manufacturers, but more often buy from distributors or from computer stores that need to move excess inventory. "Dealers have to keep their numbers up," says George Sutyak, general manager of Northeastern, a large mail-order house specializing in Apple II, IBM PC, and Macintosh products. Like many mail firms these days, the company also sells its own computer, the Northeastern Turbo PC.

According to industry insiders, companies like Lotus and IBM don't like their dealers selling products to mail-order houses, a practice referred to as the "gray market." To stop the practice, they sometimes buy products from mail-order dealers, and trace the serial numbers back to the original dealer, who is then punished. But the "gray market"

shouldn't bother the consumer, because either the manufacturer, the dealer, or the mail-order house (or some combination) generally honors the warranty.

Manufacturers that sell through mass merchandise chains, like Atari and Commodore, are more likely to sell directly to mail order houses.

Great Western Electronics takes a different approach. It's a Tandy/Radio Shack franchise with a regular Radio Shack Store in Montrose, Colorado, but also sells all of the Tandy computers by mail, at reduced cost. The computers come to Great Western directly from Tandy. "We charge less for the mail-order computers because we don't provide the same service we do in the store," says Jim Faulkner, owner of Great Western Electronics.

MAIL ORDER SECRET #2

Secret number two to the low prices is overhead—or lack of it. When you spend \$1,000 in a computer store, a good chunk goes for street-front rent in a shopping district, furnishings, salaries, and services. A mail-order company really just needs a warehouse, a few magazine ads, and somebody to pick up the phone. The bigger and better outfits, however, bolster this skeleton crew with good technical phone support. "Customers get better service from us than they do from a place like K-Mart," says Pete Sattler, part owner

WHAT SHOPPERS THINK ABOUT MAIL ORDER

Many computer owners have bought by mail or are willing to do so, according to a FAMILY COMPUTING survey conducted on CompuServe. Only seven percent said they would never purchase computer equipment by mail; 72% said they already bought equipment by mail.

Of those buyers, 55% were "very satisfied," and 25% were "somewhat satisfied" with the service. Only 3% were "not satisfied." Product orders broke down like this: Software (72%), peripherals (50%), accessories (36%), and computers (10%).

The single most important reason people buy from mail-order houses is "lower prices," noted by 50% of respondents. The single most important drawback is that "you can't see or try out what you're buying," noted by 67% of respondents.

Nearly 250 people participated in the survey, which ran for three weeks in April. FAMILY COMPUTING conducts monthly surveys on CompuServe (type GO FAM) to "take the pulse" of computer owners.

of Tussey Computer Products ([800] 468-9044).

The more technically sophisticated the product—say, a speech synthesizer or an accounting software package—the closer mail-order houses can match the service of a retail outlet. That's because few store salespeople understand those products very well.

MAIL ORDER DRAWBACKS

Even though some mail-order houses offer good support, the biggest drawback of mail order is still that you have to buy "blind." Unless you've seen or used a given product elsewhere, you don't have the opportunity to try it out. And you don't have the chance to meet the salesperson, shake hands, and form a relationship that may come in handy if you have problems later. As far as training goes, mail order houses certainly don't offer training seminars like many computer dealers do.

If anything goes wrong with a product, especially a computer, you can't bring it back to the dealer for a quick checkup. You have to mail the product back, which takes time and money. Of course, no matter where you buy, you sometimes have to mail a product back to the manufacturer.

Another drawback to mail order is that you can't plop your money on the counter and walk out of the store with a shiny new product. A mail order house generally needs a week or two to deliver the product, though you can usually get overnight delivery if you're willing to pay for it. Backlogged mail order houses might take eight weeks to deliver, especially around the Christmas season. And you won't know until the product comes how long delivery will take. However, a good mail-order house should tell you if the product is in stock and when it will be mailed.

Finally, don't expect to find the latest products on the market at mail-order discounts. While new software releases might be available within three weeks, most high-ticket hardware won't filter down to mail order for several months. If you want to be the first on your block with a hot, new product, go to a dealer.

MAIL ORDER FEARS

The biggest fear about mail-order companies is that they're going to take your money and run. "The problem is worst at Christmas when you see ads from a lot of companies you've never heard of," says Protec-

to's Bill Badger. "Most won't be around on January 1."

Your local computer store, naturally, isn't too thrilled about the whole idea of mail order and will sometimes foster the belief that mail order is a scam. A lot of people go to a computer store to decide what they want to buy, and then make their purchase through a mail-order company to get a lower price. Thus some computer salespeople tell you that if you buy mail order and have any problems, there's nothing you can do. This is not usually true. Other salespeople tell you that mail-order software is pirated software or that mail-order companies will simply take your money and go out of business.

Some companies will go out of business without returning your money. Judy Hunt, from Napa, California, sent a check for \$300 for an Adam disk drive and a subscription to a newsletter called *Garden of Adam*. Her check was cashed the next day, but she received just one issue of the newsletter and no disk drive. After many calls to complain and letters to the attorney general's office, Hunt finally brought suit in small claims court and got her money back. It took eight months.

"When I called the postmaster's office, I found that this guy had ripped off many, many people," says Hunt. However, other than that one bad experience, Hunt has no complaints. "I still order through the mail. With Adam, it's the only way to get supplies," she says.

Even manufacturers sometimes get burned by mail-order outfits. Hercules Computer Technology, Inc., which makes both color and monochrome graphics display adapters for the IBM PC, brought suit against two companies that it says were violating their copyrights by selling Hercules "clones" with copies of Hercules documentation and software.

"There are always people out there ready to rip you off," says Computer Mail Order's Doran. "When you don't see people, you can take liberties with them." Protecto's Badger says: "If someone takes your money and runs, there's not much you can do, especially when dealing with goods that have crossed state lines."

But, as most people realize, there are shady outfits everywhere. And a mail-order house that has been in business for a while has a reputation to uphold. Northwestern's Sutyak says, "All mail-order companies are privately owned, and none belongs to a group like the Direct Marketing Association. We're more or less a self-policing industry. Word of a bad deal gets around."

MAIL ORDER DELIVERS

In talking with people who've used mail order, we found that mail-order companies almost always deliver what they promise. If you have problems with your equipment or payment, they usually make an effort to solve it as quickly and painlessly as possible. Most mail order companies are not fly-by-night swindlers. They want you to be a regular customer.

"Every computer I sell is worth \$1,000 in future sales," says Protecto's Badger, whose company spends \$3 million a year on advertising and direct mail. Logicsoft, a Farmingdale, New York mail-order distributor ((800) 645-3491), says it posted \$80 million in revenues last year, and recently signed an agreement for a \$2 million advertising campaign. You know this company isn't a couple of guys working out of a bus terminal somewhere.

In some ways, mail order can be more legitimate than a regular store. The salespeople in a computer store usually work on commission; the more money they take in, the more they keep for themselves. Sometimes they'll try to sell you obsolete products to clear their shelves, or products that are more elaborate and expensive than you need. The people answering phones in mail-order houses don't get a commission on sales. So you can simply tell them what you want to buy.

MAIL ORDER CUSTOMERS

Is mail order right for you? A few years ago people would walk into computer stores and ask, "Can you tell me what a computer does?" Today, people are more knowledgeable, and don't require as much training or hand-holding. Nonetheless, it is wise to make your first purchases in a store near you, so you can walk back in the next day to iron out start-up problems. You should be willing to pay a little extra for that service.

But if you've already got a system and just need a new disk drive or a piece of software, or if you live in a rural area and don't want to spend Saturday driving across the state—mail order may be perfect for you. If you're experienced with computers and know exactly what you want, there's no reason to pay extra for some salesperson to hand a product across the counter to you.

Just take a few precautionary steps before diving in. Then pick up the phone, sit back, and wait for your package to arrive. ☐

HOW TO EVALUATE MAIL ORDER COMPANIES

- Find out if the mail-order company has advertised over a period of time. More often than not, steady advertising means a steady company. In the holiday season especially, be on the lookout for "one-shot" companies that go out of business on January 1. A "money-back" guarantee, free trial period, and a toll-free (800) phone number are usually signs of a reliable company.

- Call the local Chamber of Commerce and ask what they can tell you about a certain mail-order company. Unless it's brand new, the company should be a member, and should be listed. You can also call the Better Business Bureau, but they might not have complaints about a company on file until at least 90 days after the fact.

- When you call a mail-order house, ask a few general questions—even if you don't know the answers—to see how knowledgeable the staff is. If the answer is, "We just take orders," hang up. It might mean they don't have the product in stock and won't get it until they receive enough orders. It certainly means that you'd have trouble getting technical support after you buy.

HOW TO PLACE A MAIL ORDER

- When you're ordering from a mail-order house for the first time, place a small, inexpensive order. See what happens. If the service is good and as advertised, go back for more.

- Before you place an order, ask about the warranty: Is the manufacturer's warranty good, or does the mail-order house offer its own warranty? If the mail-order house has a money-back guarantee, ask how long you have to return the product. Some houses offer a free "trial period."

- Ask how and when the merchandise will be shipped. Postal regulations require a company to notify you within 30 days if the item you've ordered is out of stock; a good mail-order house will do so immediately. If the product doesn't arrive within two weeks after the given shipping date, ask for a "tracer" on the order.

- Read the fine print. Be careful to see if there are shipping charges, handling charges, or surcharges for credit card users. Some mail-order houses charge an annual "membership" fee, which offers you no benefits and is, in effect, a surcharge. Others will ship overnight mail (Federal Express) if you buy a minimum amount, such as \$50, and charge you the standard "ground mail" rate.

- Remember that you don't have to pay taxes on goods bought in another state. If a state has a 5% sales tax, and you buy a \$1,500 computer, you can save \$75 (which can cancel out the shipping charge.)

—NICK SULLIVAN

1986 BUYER'S GUIDE TO

MUSIC

HARDWARE AND SOFTWARE

REGARDLESS OF MUSICAL TALENT, YOUR FAMILY CAN MAKE BEAUTIFUL MUSIC

BY JOEY LATIMER

Larry Dunlap, a 37-year-old oil worker from Houston, Texas, uses his family's Apple II+ computer in his spare time to compose and listen to music. When Dunlap loads the software that turns his computer keyboard into a "piano," his one-year-old daughter, Alder, often presses the computer keys and is delighted by the music it makes.

Jim West, 53, of San Diego, California, is an electronic design engineer by day and jazz musician by night. West has connected an electric piano keyboard, a drum machine, and other equipment to his IBM PC. His goal is to use his computer and some additional hardware to imitate a jazz quintet, complete with piano, bass, drums, flute, and vibraphone.

Although their ages and musical abilities are quite different, the Dunlaps and West are using their computers for the same exciting applications: to experiment, learn about, and have fun with music.

Whether you're a music student, a virtuoso, a Sunday composer, a person who dabbles in music, or someone who just likes to listen, there's something for you in FAMILY COMPUTING's "1986 Buyer's Guide to Music Hardware and Software." We've included information on a wide range of music products, from recording software to music-skills programs to plastic keyboards. To help you and your family find the right computer-music products, there are comparison charts of music software and hardware, as well as a round-up of the built-in sound and music capabilities of most popular computers. You'll also find an exclusive interview with singer and songwriter Barry Manilow, who reveals how he first got involved with computers, what he's doing to progress, and some of his feelings about computers and music. FAMILY COMPUTING hopes to help your family bring beautiful music into your home.

COMPUTERS ARE MUSICALLY TALENTED

It's no mystery why computers and music are such perfect companions: Computers can remember and store all types of information, including musical data, which can later be recalled; computers are equipped with built-in clocks and timing features making it easy to keep track of musical time; computers can hook up to printers, which are handy for printing music; and computers

can be connected through interfaces to musical instruments and other computers, which means that musical information can be sent from computer to computer, instrument to computer, and computer to instrument. Thus your computer is an ideal tool for composing, recording, storing, printing, and sending or receiving music. As for musical novices, the computer is a great tool for experimenting. Its never-ending patience makes it a great "drill instructor" for music practice and learning.

As you may know, most computers can play music and make sound effects without special hardware—as long as they have built-in "sound chips." A sound chip is an integrated circuit in your computer, capable of playing musical notes. Sound chips vary greatly in the number of voices—or musical parts—they can play at the same time and in the range of pitches, from low notes to high notes. Many computer sound chips can also produce "white noise," which sounds similar to steam escaping. It can be manipulated to make sound effects such as bombs, crashes, wind, and thunder, or to distort pure tones for special effects.

The following round-up describes the built-in music capabilities of most popular computers to help you determine if your computer is naturally a musical gem, or if it could use add-on hardware to give it a musical boost.

Apple II+, IIe, IIc: no sound chip; one voice; tiny speaker is built into each keyboard; range of tones can be produced using special software; IIc has a volume control feature. (Note: This month's Programmer section includes Apple Harmony, a program that gives the Apple II series three voices.)

Apple Macintosh: internal sound chip; up to four voices; capable of advanced sounds; sounds can be sent to external stereo speakers; music can play in background while the computer executes a BASIC program.

Atari 520 and 1040 ST: internal Yamaha synthesizer chip; three voices; capable of advanced sound synthesis; built-in MIDI ports for connecting to MIDI instruments and other computers. (See "Midi: The Link to the Music World," below.)

Atari 400/800, 600/800/1200XL, 65/130XE: internal sound chip; four voices, each capable of producing pure tones as well as white noise and distortion; eight-octave (eight-note scale) sound range; audio cable from monitor can plug into a stereo for improved sound.

Coleco Adam: internal sound chip; three voices, each

JOEY LATIMER is FAMILY COMPUTING's associate technical editor.

capable of producing pure tones as well as white noise and distortion; can be programmed to play a wide range of sound effects; six-octave sound range.

Commodore Amiga: internal sound chip; up to 16 voices; capable of highly advanced sound and voice synthesis; nine-octave sound range; can reproduce and modify sounds taken from the real world.

Commodore 64/128: internal sound chip; three voices, each capable of producing pure tones as well as white noise and distortion; includes advanced features for creating and modifying instrument sounds and special effects; eight-octave sound range; audio cable from monitor can plug into a stereo for improved sound.

IBM PC & compatibles: no sound chip; one voice; advanced features in Advanced BASIC make music programming easy (PLAY language); sound plays through small internal speaker.

IBM PCjr and Tandy Model 1000: internal sound chip; three voices; advanced features in PCjr Cassette BASIC make music programming easy (PLAY language); music can play in background while the computer is executing a BASIC program.

Tandy/Radio Shack TRS-80 Color Computers: internal sound chip; one voice; four-octave sound range; options are limited to setting notes, pitch, and duration.

HARDWARE BEEFS UP YOUR COMPUTER

Although your computer can make music on its own, you can really bring exciting and powerful music features into your computer system by adding music hardware. In the accompanying music hardware chart, we've included add-on keyboards and MIDI interfaces. Add-on keyboards are input devices (like joysticks) which either lie on top of your computer's keyboard or look like small piano keyboards that plug into a user port, cartridge port, or slot on your computer. MIDI interfaces let you connect MIDI-equipped instruments to computers.

MIDI: THE LINK TO THE MUSIC WORLD

MIDI, which stands for Musical Instrument Digital Interface, is a foreign term to the average opera fan or guitar strummer. But if you decide to plunge into the world of computer-generated music, you'll want to know about it. MIDI is a common interface through which many makes and models of musical instruments can be connected. It's also a standardized way to connect electronic musical instruments to your computer. For example, a MIDI interface makes it possible to link your Commodore 64 to a Casio keyboard. This keyboard can be told by your computer when and what to play: Your computer will do things like compose and store music and print scores, while the Casio actually plays the music.

With the exception of the Atari ST and the Yamaha CX5M Music Computer (sold in music stores), computers don't have built-in MIDI interfaces. They usually come in the form of plug-in cards, cartridges, or boxes. Some enable you to hook up more than one MIDI instrument at the same time so you can simulate an orchestra right in your living room. (For more information on MIDI, you can write the International MIDI Association at 11857 Hartsook St., North Hollywood, CA 91607 or call [818] 505-8964.)

As you can see by the accompanying hardware chart, there are many add-on hardware products that can really beef up your computer and give your family some exciting possibilities for music making. (Note: While there are scores of MIDI pianos, organs, synthesizers, drum machines, and other MIDI instruments available, we have only listed a few of them. If your family is thinking about buying a MIDI instrument, you should visit a music store.)

SOFTWARE BRINGS IT ALL HOME

Regardless of the music hardware your computer system has, it can't do anything without software. But, with the right software, your family can listen to and sing along with popular songs, record new ones, print scores, create custom instrument sounds, practice note recognition, and more. Software brings it all home and puts musical power at your fingertips.

Composing, performing, and sound-shaping software—the first section of this chart—consists of programs used for recording, composing, music editing, score printing, creating and changing instrument sounds, and more. To help you see whether a program has the features you are looking for, we have printed a "Y" or "N" in the chart under the following categories:

Creates Instrument Sounds: A "Y" in this column lets you know that this program can instantly create and change instrument sounds to suit your needs. This is usually done by changing settings on the screen and listening to the results.

Saves/Loads Sounds: A "Y" in this column means that the program will save and load sound information, so that the user can save different instrument sounds for later use. Once sounds have been saved, they can be reloaded and used in future performances and playbacks.

Records: A "Y" in this column indicates that this program will record your performances "live," and then let you play them back.

Sequences: Sequencing (composing music on the computer screen one note at a time) is an alternative to recording "live" performances. The most popular way to sequence is to use a joystick, mouse, or cursor keys to move musical notes and symbols onto musical staves, which are printed on the screen. Sequenced scores can be played back, saved on disk, or used to control MIDI-equipped instruments.

Saves/Loads Music: When you have finished recording or sequencing music, a "Y" in this column means that you can save it on disk.

Prints Scores: A "Y" here means that you can print sheet music if you have a compatible printer with graphics capabilities.

MIDI Compatible: If you want software that will work with a MIDI interface and MIDI-compatible instruments, look for a "Y" in this column.

The educational section of the music software chart will be most useful for families who lack the musical expertise of the Jacksons. If your musical prowess is limited to knowing the lyrics of Top 40 songs, these programs can help. Included are musical games, drill-and-practice programs for sight reading and ear training, a sound-synthesizer tutorial, instructional guitar programs, and more. Educational music programs have a category heading for "learning level" to let you know approximately at what level a person should be musically before attempting to use the program.

GET THE FAMILY IN TUNE


Now you have the information you need to start building or adding to a family music studio. As you can see by our software charts, dabbling in music doesn't have to be expensive or complicated. There are plenty of programs under \$50 that you can slip into your disk drive to start experimenting with and composing music. And if you're a serious musician, a set-up complete with MIDI instruments, interfaces, and software will cost substantially more, but its music potential will be boundless. So what are you waiting for? Take off your Walkman and fire up your computer. It's time to make your own music.

MUSIC SOFTWARE

Company Name, Address, Phone	Product Name and Cost	Description and Comments	Hardware Required	Ease of Use								
					Create Inst	Sav/Ld Sounds	Records	Sequences	Sav/Ld Music	Print Scores	MIDI Comp	
COMPOSING, PERFORMING, AND SOUND-SHAPING SOFTWARE												
Access Software Inc. 2561 S., 1560 West Woods Croft, UT 84087 (801) 298-9077	MASTER COMPOSER \$40	Music-composition tool with sound shaping. ¹ Notes are entered on a screen similar in appearance to sheet music.	Commodore 64/128	average	Y	Y	N	Y	Y	Y	N	
Activision 2350 Bayshore Frontage Road Mountain View, CA 94043 (415) 960-0410	THE MUSIC STUDIO \$50 (IBM) \$60 (Amiga) \$35 (Atari)	Colorful tool kit for creating songs and sounds. Screens feature icons and a pointing wand.	Amiga; Atari ST series/800; Commodore 64/128; IBM PC; Tandy 1000; joystick or KoalaPad.	easy	Y	Y	N	Y	Y	Y	Y	
Broderbund 17 Paul Drive San Rafael, CA 94903 (415) 479-1170	THE MUSIC SHOP (non-MIDI version) \$45	User-friendly program makes it easy to move notes on and off a musical staff, as well as shape instrument sounds.	Commodore 64/128; joystick.	easy	Y	Y	N	Y	Y	Y	N	
ComputerWare P.O. Box 668 Encinitas, CA 92024 (619) 436-3512	SYNTHET 77 \$28	Turns keys into piano keys covering any two octaves over a twelve-octave spread.	32K TRS-80 Color Computer	easy	Y	Y	Y	Y	Y	N	N	
Creative Solutions 4701 Randolph Road, #12 Rockville, MD 20852 (301) 984-0262	STUDIO MAC \$125 \$214 w/MIDI adapter \$495 w/Casio keyboard, MIDI adapter & stereo cable	Powerful sequencer ² and sound shaper lets you change orchestration in the middle of a song. Also includes cut-and-paste features.	128K Macintosh; cable for connecting Macintosh to stereo.	average	Y	Y	N	Y	Y	N	Y	
Electronic Arts 2755 Campus Drive San Mateo, CA 94403 (415) 571-7171	MUSIC CONSTRUCTION SET \$23 (Commodore & Atari) \$40 (Apple & IBM)	Lets you move notes and other musical symbols onto a high-resolution musical staff. Uses icons for easy learning and quick results.	48K Apple; 48K Atari; Commodore 64/128; IBM PC/PCjr; Macintosh	easy	N	N	N	Y	Y	Y	N	
	DELUXE MUSIC CONSTRUCTION SET \$46	Mouse-operated composing tool. Includes support for lyrics, guitar notation, different fonts, and many advanced musical options.	128K Macintosh; mouse; MIDI- compatible instrument; MIDI interface and cables.	easy	Y	Y	N	Y	Y	Y	Y	
EnTech Software P.O. Box 185 Sun Valley, CA 91353 (818) 768-6646	STUDIO 64 \$40	Converts computer keyboard into piano keys. Lets you assign more than one instrument to each note.	Commodore 64/128	easy	Y	Y	Y	Y	Y	N	N	
Firebird Software 74 N. Central Ave. Ramsey, NJ 07446 (201) 934-7373	THE CONCISE MUSIC SYSTEM \$40	Contains sequencer and sound-shaper programs. Screen contains windows and pull-down menus for easy operation.	Commodore 64/128	average	Y	Y	Y	Y	Y	N	N	
	THE ADVANCED MUSIC SYSTEM \$80	Similar in appearance to <i>The Music System</i> . Also includes MIDI features, printer capabilities, and file-linker program.	Commodore 64/128	average	Y	Y	Y	Y	Y	Y	Y	
Future Vision P.O. Box 34-FC N. Billerica, MA 01862 (617) 663-8591	VIDEO TUNES \$35	Songs can be composed and entered by using a joystick to place notes on a musical staff.	Adam; joystick.	average	N	N	N	Y	Y	N	N	
Great Wave Software P.O. Box 5847 Stanford, CA 94305 (415) 325-2202	CONCERTWARE + \$70 CONCERT- WARE + MIDI \$140	Music Writer, Instrument Maker, and Music Player make up this package. Turns your Mac into an electric organ.	Macintosh; mouse.	average	Y	Y	Y	Y	Y	Y	N	
Hayden Software 600 Suffolk St. Lowell, MA 01854 (201) 393-6319	MUSIC WORKS \$80	A program that gives you two ways to enter music. You can use a conventional staff or a system of putting symbols on a grid.	Macintosh; mouse.	average	Y	Y	N	Y	Y	Y	N	
Melodian Inc. 115 Broadway, Suite 1202 New York, NY 10006 (800) 327-4566	CONCERT MASTER \$30	Synthesizer ³ /recorder ⁴ program. While playing, you can see the notes on a colorful musical staff.	Commodore 64/128	average	Y	Y	Y	N	Y	N	N	
Mindscape Inc. 3444 Dundee Road Northbrook, IL 60062 (800) 221-9884	BANK STREET MUSIC WRITER \$30 (Commodore 64) \$150 (Apple w/Mockingboard) \$50 (Apple w/o Mockingboard) \$150 (IBM PC w/Mockingboard) \$50 (IBM PCjr - no board required)	Easy-to-operate program that lets you compose and play music. Works with Mockingboard that allows you to play up to six voices.	48K Atari 800; Commodore 64/128; 48K Apple; IBM PC/PCjr	easy	Y	N	N	Y	N	Y	N	

¹sound shaper: program for changing sounds. ²sequencer: program for arranging music. ³synthesizer: produces and controls sound. ⁴recorder: program that captures performances in real time (live).

MUSIC SOFTWARE

Company Name, Address, Phone	Product Name and Cost	Description and Comments	Hardware Required	Ease of Use								
					Create Inst	Sav/Ld Sounds	Records	Sequences	Sav/Ld Music	Print Scores	MIDI Comp	
COMPOSING, PERFORMING, AND SOUND-SHAPING SOFTWARE (continued)												
Passport Designs 625 Miramontes St., No. 103 Half Moon Bay, CA 94019 (415) 726-0280	THE MUSIC SHOP (MIDI version) \$150	User-friendly program makes it easy to move notes on and off the "sheet music." Pull-down menus make it one of the easiest MIDI programs to learn.	Commodore 64/128; joystick, MIDI-compatible instrument; MIDI interface and cables.	easy	N	Y	Y	Y	Y	Y	Y	
Scarborough Systems 55 S. Broadway Tarrytown, NY 10591 (914) 332-4545	SONGWRITER \$20	A simple program for creating and storing melodies and songs.	48K Apple; 48K Atari; Commodore 64/128; IBM PC (needs color/graphics adapter) PCjr.	easy	Y	Y	Y	N	Y	N	N	
Sight & Sound Music Software 3200 S. 166th St. P.O. Box 27 New Berlin, WI 53151 (800) 558-0910	MUSIC PROCESSOR \$25	A recording/performance/playback package, including a piano mode, jukebox mode, and 99 preset instrument sounds.	Commodore 64/128	average	Y	Y	Y	Y	Y	Y	N	
Spinnaker Software Corp. One Kendall Square Cambridge, MA 02139 (617) 494-1200	ROCK 'N RHYTHM \$27	Recording program that lets you see tape recorder, drummer, etc., on screen. You can play back recordings while a jukebox flashes brightly. Comes with audio tapes of songs.	Commodore 64/128; 48K Atari	average	Y	Y	Y	Y	Y	N	N	
Tandy/Radio Shack 1800 One Tandy Center Ft. Worth, TX 76102 (817) 338-2395	ORCHESTRA-90 \$80	Software/hardware package for adding stereo music capabilities to computers. You can compose, edit, and play music.	16K TRS-80 Color Computer; 48K TRS-80 Model III	average	Y	N	N	Y	Y	N	N	

Company Name, Address, Phone	Product Name and Cost	Description and Comments	Hardware Required	Learning Level
MUSIC LEARNING SOFTWARE				
Alfred Publishing 15335 Morrison St. Sherman Oaks, CA 91403 (818) 995-8811	MUSIC MADE EASY \$30	A lesson-by-lesson course in music theory. A fun way to supplement instrument lessons.	48K Apple; Commodore 64/128	beginner/intermed.
Baudville 1001 Medical Park Drive S.E. Grand Rapids, MI 49506 (616) 957-3036	GUITAR WIZARD \$40	Helps guitarists learn fingering for all types of chords and scales. You get clear graphic displays of notes and finger positions.	64K Apple	all levels
EduSoft P.O. Box 2560 Berkeley, CA 94702 (800) EDUSOFT	THE MAGIC PIANO LEARNING SYSTEM \$50	Turns your computer keyboard into a piano for composing and computer games. Games include simple rhythm and melody games. Also included is 64-page music workbook.	48K Apple	beginner/intermed.
Electronic Courseware Systems 1210 Lancaster Dr. Champaign, IL 61821 (217) 359-7099	MUSIC ROOM \$40	Ear-training made easy. Six instruments that must be tuned to a tuning pitch are piccolo, violin, trumpet, saxophone, cello, and tuba.	Commodore 64/128	all levels
	EARLY MUSIC SKILLS \$30	Tutorial and drill program designed for the beginning music student. Covers staves, notes, and more. Keeps records of student scores.	48K Apple; Commodore 64/128	beginner
Mastersoft P.O. Box 1027 Bend, OR 97709 (503) 388-7654	MASTERY IN MUSIC SERIES \$50 each unit	Series of instruction programs with titles such as <i>Singing Master</i> , <i>Guitar Master</i> , <i>Flute Master</i> , and more. Each tutorial contains a wealth of information, whether you're a beginner or professional.	Apple II+, IIe, (Mockingboard required); Commodore 64/128	all levels
Melodian Inc. 115 Broadway, Suite 1202 New York, NY 10006 (212) 327-4566	RHYTHM MASTER \$30	A colorful and progressively more challenging game for improving rhythm and note-pattern recognition. If you fare well, you may end up a master like Bach or Beethoven.	Commodore 64/128	intermed./ advanced
Passport Designs 625 Miramontes St., No. 103 Half Moon Bay, CA 94019 (415) 726-0280	KEYBOARD BLUES \$130	Introduces students to twelve-bar blues and lets students practice playing and hearing the chord changes.	Apple II+, IIe; Commodore 64/128; MIDI-compatible instrument; MIDI interface and cables.	beginner/intermed.
	KEYBOARD NOTE DRILL \$80	A program designed to increase speed in identifying notes randomly placed on staves. The MIDI keyboard is used to select correct answers.	Apple II+, IIe; Commodore 64/128; MIDI-compatible instrument; MIDI interface and cables.	intermediate
Sight & Sound Music Software Inc. 3200 S. 166th St. P.O. Box 27 New Berlin, WI 53151 (800) 558-0910 (800) 328-1223	3001 SOUND ODYSSEY \$25	Powerful synthesizer/sound-shaping program with a good interactive tutorial on sound synthesis and a sequencer for recording.	Commodore 64/128	intermed./ advanced

MUSIC HARDWARE

Company Name, Address, Phone	Product Name and Cost	Product Type and Description	Hardware Required	Ease of Use
ADD-ON KEYBOARDS				
Casio Inc. 15 Garner Road Fairfield, NJ 07006 (201) 575-7400	CZ-101 Cosmo Synthesizer \$499	49-Key/4-octave synthesizer. Mini-size keys. Stores 32 instrument sounds at once (48 with add-on cartridge). MIDI input ¹ and output ² jacks.	To use the CZ-101 with a computer, you need a MIDI interface and cables, along with MIDI software.	difficult
	CZ-230S \$499	100 pre-set sounds; drum sounds are pre-set and programmable; built-in speaker.	To use the CZ-230S with a computer, you need a MIDI interface and cables, along with MIDI software.	difficult
Melodian Inc. 115 Broadway No. 1202 New York, NY 10006 (212) 757-2287	Melodian Keyboard \$99	40-key plastic keyboard. Mini-size keys. Includes interface to hook up to computer, along with <i>Concert Master</i> , <i>Rhythm Master</i> and <i>Score Master</i> software.	Commodore 64/128	easy
Sight & Sound Music Software, Inc. 3200 S. 166th St. New Berlin, WI 53151 (800) 558-0910	Incredible Music Keyboard \$30	24-key plastic keyboard. Half-size keys. Fits over existing computer keyboard. <i>Incredible Music Keyboard</i> software and two music books included.	Commodore 64/128	easy
Yamaha International Corp. P.O. Box 6600 Buena Park, CA 90620 (714) 522-9011	DX-100 Synthesizer \$445	49-key/4-octave synthesizer. Mini-size keys. Holds up to 192 instrument sounds at once. Includes MIDI input, output, and thru ³ jacks.	To use the DX-100 with a computer, you need a MIDI interface and cables, along with MIDI software.	difficult
MIDI INTERFACES				
Dr. T's 66 Louise Road Chestnut Hill, MA 02167 (617) 244-6954	Model-T Interface \$90	MIDI input and output. Plugs into cartridge slot.	Commodore 64/128; SX-64	
Hybrid Arts 11920 W. Olympic Blvd. Los Angeles, CA 90064 (213) 826-4288	MIDIMATE Interface \$200	MIDI input and output.	32K Atari	
Passport Designs 625 Miramontes St., No. 103 Half Moon Bay, CA 94019 (415) 726-0280	Interface with Drum Sync \$149 (Apple) \$129 (Commodore)	Drum sync ⁴ ; MIDI input and output. Plugs into cartridge slot on C-64 and internal slot on Apple IIe.	Commodore 64; Apple IIe	
	Macintosh Interface \$100	MIDI input and output.	Macintosh	
	Passport MPU-401 Compatible Interface \$310	MIDI input and output; drum sync input & output.	IBM PC & compatibles	
Roland Corp. 7200 Dominion Circle Los Angeles, CA 90040 (213) 685-5141	MPU-401 MIDI Processing Unit \$200	1 MIDI input, 2 MIDI outputs.	Apple II+/IIe; IBM; Commodore 64/128	

¹input: port for bringing information into instrument or computer. ²output: port for sending information out of instrument or computer. ³thru: jack that allows information to pass through instrument or computer. ⁴drum sync: interfaces with drum machine.

BARRY MANILOW: READY TO TAKE A CHANCE WITH COMPUTERS



"Mandy," "It's a Miracle," "I Write the Songs," "Tryin' to Get the Feeling," "Some Kind of Friend," and "I Made It Through the Rain" are just a few of the 25 Top 40 hits sung by one familiar voice: Barry Manilow's. Since the mid-seventies, Manilow—whose career has spanned songwriting, album recording, the concert stage, Broadway, and television—has been using the ever-popular love theme to relate to audiences of all ages.

Manilow can relate to FAMILY COMPUTING readers in many areas other than love. The 38-year-old Brooklynite spends his free time doing many of the same things that you may do. He enjoys watching "Laverne & Shirley," "60 Minutes," and "Family Feud," and his special interests include word games, crossword puzzles, and best-seller books. He has one other special interest we haven't mentioned yet: computers.

Barry was bitten by the computer bug three years ago, much the same way as he became smitten with the accordion when he was seven years old. Surprisingly, his interest in computers wasn't sparked by a desire to use micros for music: Manilow had begun writing an autobiography and realized that word processing on a computer would be much less cumbersome than typing. This is what Manilow told FAMILY COMPUTING about his first experiences with computers and computer-generated music:

FAMILY COMPUTING: Why did you start looking at computers three years ago?

Manilow: Everyone but me seemed to know about them! So I went out and bought all of the computer magazines I could find. I figured I'd better look into computers. I mean, where had I been? How did all of this computer stuff happen without my

knowing it? I kept reading magazine after magazine until some of the language began to sound familiar. Then I went into my first computer store.

FC: What was your first trip to the computer store like?

Manilow: My first computer salesman was very gentle (he knew I was terrified). But within a half hour, I had spent \$5,000. I didn't believe what I was doing! I bought a Digital Rainbow.

FC: Did you stick with the Rainbow computer?

Manilow: I used the Rainbow 100 for about six months and became absolutely hooked. I mean *hooked*. I wouldn't leave it. I think I liked it even more than I liked the piano!

But I was going on the road and wanted to take my computer with me. I finally discovered the Panasonic Sr. Partner. It's portable, IBM-compatible, and has a built-in printer.

FC: Why do you bring the computer on the road with you?

Manilow: I use the computer daily to communicate with other maniacs on CompuServe and on electronic networks such as the Performing Artists Network (PAN). I've made some interesting friends there. I'm also rolling along with my memoirs.

FC: Barry, you've talked to us about word processing and telecommunications. Don't you use computers to make music?

Manilow: I've been able to connect a few of my keyboards together via MIDI. The MIDI invention is already revolutionizing the music industry. And creating songs with computers is fun.

FC: Let's talk about the novice musician. Do you think computers can be effective music teachers?

Manilow: Computer/keyboard teaching can be a supplement to human teaching. I don't think computers can replace humans in teaching the scales, the études, or the basics of music education. But once you've gotten the basics down, computers can take you further than ever!

—JOEY LATIMER

With the Programmer



ILLUSTRATION BY BARTON STABLER

★ A U G U S T ★

HOME HELPER PROGRAM
Page 46

Stop switching back and forth between your word processor and your typewriter! *Electronic Typewriter* will handle those small typing jobs with flair!

FEATURE PROGRAM
Page 62

Calling all Apple owners! Tired of beeps and buzzes? *Apple Harmony* adds two-voice sound to your Apple's repertoire—without special hardware!

PROGRAMMING P.S.
Page 60

TIPS TO THE TYPIST
Page 61

How to type in FAMILY COMPUTING's programs.

MORE PROGRAMS IN K-POWER
Page 75

Fire off a *Solar Ray Gun* (page 78), or probe the energy grid in *Radar Search* (page 79).

ILLUSTRATION BY JAMES CHERRY III

Cherry

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580 IF CX>LM THEN 600
590 DL=3:GOSUB 7000:GOTO 190
600 IF RM<WL OR RM>WR THEN 620
610 POKE 214,13:PRINT:PRINT TAB(RM-WL);SP$
620 RM=CX:GOSUB 6000:GOTO 190
630 SM=SM+1:IF SM=4 THEN SM=1
640 GOSUB 3000:GOTO 190
650 TB(CX)=ABS(NOT-TB(CX)):POKE 214,14:PRINT
660 IF TB(CX)=0 THEN PRINT TAB(CX-WL);SP$:GOTO 190
670 PRINT TAB(CX-WL);RD$;"T";BES:GOTO 190
680 Z$="":T$="":POKE 214,16:PRINT:PRINT CL$
690 CX=LM:GOSUB 1000:GOTO 190
1000 POKE 214,18:PRINT:PRINT TAB(4);STR$(CX);SP$
1010 IF CX>=WL AND CX<=WR THEN RETURN
1020 POKE 214,13:PRINT:PRINT CL$:IF CX<WL THEN 1050
1030 WR=CX+10:IF WR>80 THEN WR=80
1040 WL=WR-20:GOTO 1070
1050 WL=CX-10:IF WL<1 THEN WL=1
1060 WR=WL+20
1070 POKE 214,14:PRINT:PRINT CL$
1080 FOR L=WL TO WR:IF TB(L)=0 THEN 1100
1090 POKE 214,14:PRINT:PRINT TAB(L-WL);RD$;"T";BES
1100 NEXT L:GOSUB 4000
1110 POKE 214,15:PRINT:PRINT BL$;MID$(GD$,WL,21);BES
1120 POKE 214,17:PRINT:PRINT BL$;MID$(GD$,WL,21);BES
1130 GOSUB 5020:GOSUB 6020:RETURN
2000 POKE 214,18:PRINT
2010 IF MD THEN PRINT TAB(9);BL$;"REPLACE MODE";BES:RE
TURN
2020 PRINT TAB(9);"INSERT MODE";SP$:RETURN
3000 POKE 214,19:PRINT:ON SM GOTO 3010,3020,3030
3010 PRINT TAB(9);"SINGLE SPACE":RETURN
3020 PRINT TAB(9);BL$;"DOUBLE SPACE";BES:RETURN
3030 PRINT TAB(9);BL$;"TRIPLE SPACE";BES:RETURN
4000 T=LEN(T$):IF T<WL THEN Z$="":GOTO 4030
4010 IF T<WR THEN Z$=MID$(T$,WL,T-WL+1):GOTO 4030
4020 Z$=MID$(T$,WL,21)
4030 POKE 214,16:PRINT
4040 PRINT Z$;LEFT$(CL$,21-LEN(Z$));:RETURN
5000 POKE 214,19:PRINT
5010 PRINT TAB(3-(LM<10));STR$(LM);SP$
5020 IF LM<WL OR LM>WR THEN RETURN
5030 POKE 214,13:PRINT
5040 PRINT TAB(LM-WL);RD$;"L";BES:RETURN
6000 POKE 214,20:PRINT
6010 PRINT TAB(3-(RM<10));STR$(RM);SP$
6020 IF RM<WL OR RM>WR THEN RETURN
6030 POKE 214,13:PRINT
6040 PRINT TAB(RM-WL);RD$;"R";BES:RETURN
7000 FOR L=15*DL TO 0 STEP -0.5
7010 POKE 36878,L/DL
7020 NEXT L:RETURN
8000 DATA 157,29,20,172,162,182,13,148,171,178,174,163
,19
9000 DATA <C=>+<D>,DELETE CHAR
9010 DATA <C=>+<I>,TO NEXT TAB
9020 DATA <C=>+<L>,LEFT MARGIN
9030 DATA <C=>+<Q>,QUIT,<C=>+<R>,RIGHT MARGIN
9040 DATA <C=>+<S>,LINE SPACING
9050 DATA <C=>+<T>,SET/CLR TAB
9060 DATA <DEL>,BACKSPACE
9070 DATA <RETURN>,PRINT LINE,<HOME>,CLEAR LINE
9080 DATA <INST>,INST/REPLACE
9090 DATA <- OR ->,MOVE CURSOR

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PROGRAMMING P.S.

Corrections to Previous Months' Programs

Fox and Geese (March 1986, page 66)

Apple II series w/48K RAM: When typing in this program, make sure not to add any REM statements or other extra lines. (If you do, the program and its variables will be too large to fit in the area of memory normally reserved for programs and will start to run over into the area where the first high-res screen is stored.)

Also, the program as published allowed the fox to make certain illegal moves in a multiple jump and did not handle the endgame correctly. To fix these problems, change lines 330, 580, 600, 610, 790, 1160, 10020 and 10030 to read as follows:

```

330 IF NL = 0 THEN 1140
580 IF DC > 1 THEN 620
600 PRINT "YOU'VE FORFEITED YOUR DECLARATION.";BPS;
610 GOSUB 11000:DC = 0:GOTO 550
790 IF DC THEN DC = DC+1:GOTO 320
1160 GOTO 1240
10020 IF X = 0 AND Y = 0 THEN 10060
10030 GB = GB+(Y >= FY)

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Letter Getter (May 1986, page 52)

Adam: Due to a printing error, the "i" letters in lines 50, 150, and 270 weren't dotted. They are, indeed, lowercase "i" 's.

Maze Creator (May 1986, page 55)

Macintosh w/printer & Microsoft BASIC 2.0 or 2.1: The third line of the SET.LEVEL subroutine (the 60th line in the left-hand column on page 66) should have been printed in red. Here's that line again:

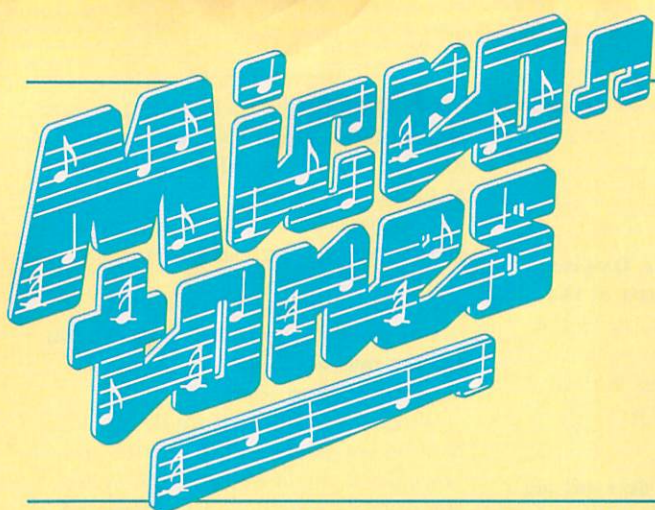
```
CLS:PRINT TAB(7);"Do you want to print a copy ";
```

If you don't have a printer, you should omit this line along with the lines that *were* printed in red.

Tandy Color Computer w/64K RAM & printer: A printer's error introduced a splotch in line 4100 (used in option 4 for the CoCo). Here's that line again, without splotches:

```
4100 PRINT#-2,CHR$(27);"K";CHR$(FB);CHR$(LB);
```

Also, line 570 should have been printed in red. If you don't have a printer, omit this line along with the lines that *were* printed in red.



MUSIC PROGRAMS

BY JOEY LATIMER

SOLAR RAY GUN

Years ago, I dreamt that I created a homemade solar ray gun. When I brought it outside, pointed it at the ground, and pressed the trigger, a *huge* hole appeared in our backyard. Luckily, when my father saw the hole, he finally agreed to get a built-in swimming pool. Too bad it was just a dream.



That dream has given me the inspiration to write this little program, which I've called *Solar Ray Gun*. I can just load it, type RUN, and fill the room with the same quasi-wild sound that the solar ray gun made in my dream. I guess I'm still hoping for that swimming pool.

ADAM/SOLAR RAY GUN

```

10 LOMEM: 29000:POKE 16953,0
20 FOR x = 28000 TO 28005:READ d
30 POKE x,d:NEXT x
40 TEXT
50 HTAB 6:VTAB 10:PRINT "Press any key to fire"
60 HTAB 8:VTAB 11:PRINT "the Solar Ray Gun."
70 GET a$:IF a$ = "" THEN 70
80 IF a$ = CHR$(3) THEN POKE 16953,95:END
90 HOME:HTAB 14:VTAB 10:PRINT "DUCK!"
100 POKE 28006,144:CALL 28000
110 FOR i = 0 TO 10:GOSUB 1000:NEXT i
120 FOR i = 0 TO 63:GOSUB 1000:NEXT i
130 POKE 28006,159:CALL 28000
140 GOTO 40
1000 POKE 28006,128:CALL 28000
1010 POKE 28006,i:CALL 28000
1020 RETURN
2000 DATA 58,102,109,211,255,201
    
```

ATARI 400/800, 600/800XL, & 130XE/SOLAR RAY GUN

```

10 OPEN #1,4,0,"K:"
20 GRAPHICS 0:POKE 752,1:PRINT CHR$(125)
30 POSITION 10,10:PRINT "PRESS A KEY TO FIRE"
40 POSITION 11,11:PRINT "THE SOLAR RAY GUN."
50 GET #1,K
60 GRAPHICS 18:POSITION 7,5:PRINT #6;"DUCK!"
70 IF K>127 THEN K=K-128
    
```

```

80 FOR I=1 TO 4
90 FOR J=K TO K+72 STEP 12
100 SOUND 1,J,10,15:POKE 53279,0
110 POKE 712,J:NEXT J:NEXT I
120 FOR I=15 TO 0 STEP -1
130 SOUND 1,70-I,10,I
140 NEXT I:GOTO 20
    
```

COMMODORE 64 & 128 (C 64 MODE)/SOLAR RAY GUN

```

10 S=54272
20 FOR I=0 TO 23:POKE S+I,0:NEXT I:POKE S+24,15
30 POKE S+5,1:POKE S+6,255:POKE S+12,1:POKE S+13,255
40 POKE 53280,0:POKE 53281,0
50 PRINT CHR$(147):POKE 214,10:PRINT
60 PRINT CHR$(156);TAB(9);"PRESS ANY KEY TO FIRE"
70 PRINT TAB(11);"THE SOLAR RAY GUN."
80 GET K$:IF K$="" THEN 80
90 K=ASC(K$):PRINT CHR$(147)
100 POKE 214,10:PRINT:PRINT TAB(17);CHR$(158);"DUCK!"
110 FOR I=K+200 TO K STEP -20
120 Y=I*40:FH=Y/256:FL=Y AND 255
130 POKE S+1,FH:POKE S,FL:POKE S+8,FH:POKE S+7,FL
140 POKE S+4,129:POKE S+11,33
150 NEXT I:POKE S+4,0:POKE S+11,0:GOTO 50
    
```

MACINTOSH W/MICROSOFT BASIC 2.0 OR 2.1/SOLAR RAY GUN

```

DIM RECT$(3)
RECT$(0)=97:RECT$(1)=174:RECT$(2)=147:RECT$(3)=365
TEXTFONT 0
WINDOW 1,"Solar Ray Gun", (0,38)-(530,338)
START:
CLS:TEXTSIZE 24
LOCATE 3,8:PRINT "Press any key to fire"
LOCATE 4,9:PRINT "the Solar Ray Gun."
LOOP:
K$=INKEY$:IF K$="" THEN LOOP
CLS:TEXTSIZE 64:LOCATE 2,5:PRINT "DUCK!"
FOR I=1 TO 8
FOR J=8000 TO 1000 STEP -1000
SOUND J,.45
INVERTRECT VARPTR(RECT$(0))
NEXT J
NEXT I
FOR I=1000 TO 5200 STEP 600
SOUND I,.45
NEXT I
GOTO START
    
```

TANDY COLOR COMPUTER/SOLAR RAY GUN

```

10 CLS(5)
20 PRINT@197,"PRESS ANY KEY TO FIRE";
30 PRINT@231,"THE SOLAR RAY GUN.";
40 K$=INKEY$:IF K$="" THEN 40
50 FOR I=1 TO 4
60 CLS(I):PRINT@237,"DUCK!";
70 FOR J=200 TO 110 STEP -30
80 SOUND J,1:NEXT J,I:GOTO 10
    
```

TI-99/4A/SOLAR RAY GUN

```

10 CALL CLEAR
20 PRINT TAB(4);"Press any key to fire"
30 PRINT TAB(6);"the Solar Ray Gun.";
40 CALL KEY(3,K,S)
50 IF S=0 THEN 40
60 CALL CLEAR
70 PRINT TAB(12);"DUCK!";
80 FOR I=800 TO 485 STEP -35
90 CALL SOUND(-50,I,0,-6,0)
100 NEXT I
110 GOTO 10
    
```

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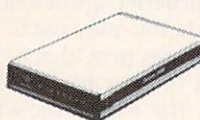
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