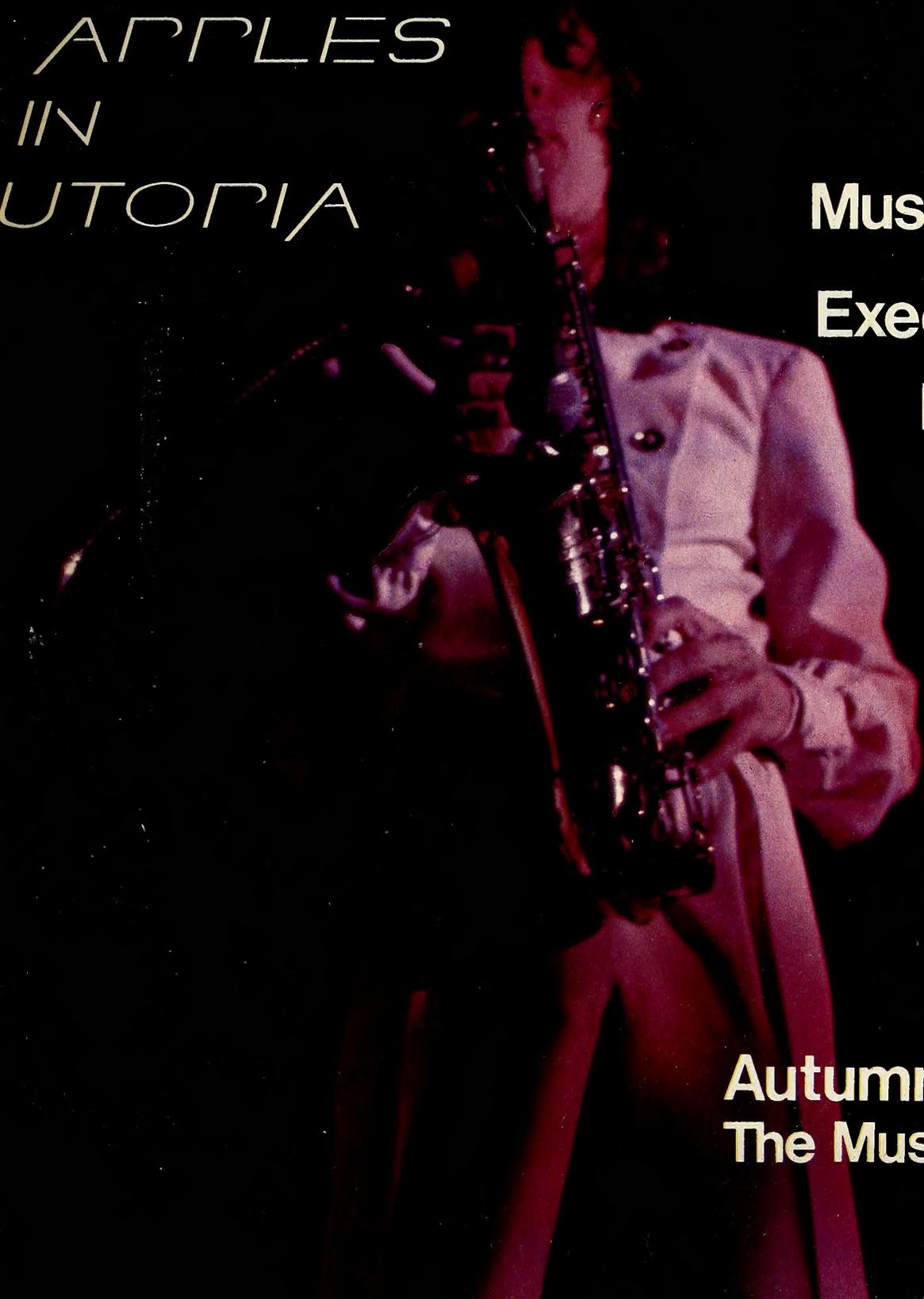


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UTOPIA

**Music Systems  
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**Autumn Leitmotif:  
The Musical Apple**



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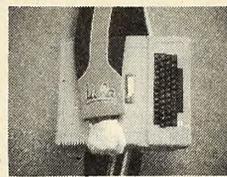


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# PREVIEWS

*Jingling into December ... Holidays, bright lights, gifts ... companies describe their best stocking stuffers ... an eye for the Apple ... planning wines and libations for seasonal entertaining ... meet the Disk Doctor ... teach your Apple to make Christmas cards ... and more.*



# CONTEST: TALKING TURKEY

# We've Got

There's a message of sorts hidden in this month's *Softalk* contest. If you can discover it, write it down, and mail it in, you could win \$100 in product from one of the advertisers in this month's issue of *Softalk*. Here's how you solve it:

- Consider the letters of the alphabet from A to Z to be valued from 1 to 26 respectively; for example, J = 10, S = 19.
- Grant each word from the list of seventy Thanksgiving goodies the value of the sum of its letters.
- Find all the words that fit the values given to add up to the grand total of 700. You'll have more words than you need, since there is more than one word representing some of the sums; only nine of

these words can be used in the final answer.

□ Anagram the first letters of these words to find the message that will fit on the dashes. For example, the first letters of the words "Perfect Apple Software" could be anagrammed as *ASP* or *SAP*.

Write the message on the coupon (or a facsimile of it), fill in your name, address, the name of your local retailer, and your choice of prize if you should win, and rush your entry to the nearest mailbox.

All entries must be postmarked by November 30, 1980.

In case of ties, Apple's random generator will determine the final winner.

### The Words

APPLE CIDER	COFFEE	GIBLETS	NUTMEG	SCALLIONS
APPLE PIE	CORN	GINGER	ONIONS	SKIN
APPLES	CRANBERRIES	GOBBLER	PARSONS NOSE	STOCK
BACON DRIPPINGS	CRANBERRY JELLY	GRAVY	PEARS	STUFFING
BRANDY	CRANBERRY SAUCE	HARVEST	PEAS	SWEET POTATOES
BREAST	CRISP AIR	INDIANS	PEPPER	THANKS
BUTTER	CURRENTS	MACYS PARADE	PIANO	THYME
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CAULIFLOUR	DRUMSTICK	MASHED POTATOES	PLYMOUTH ROCK	WALNUTS
CELERY	FAMILY SINGING	MILK	PUMPKIN PIE	WHIPPED CREAM
CHEESE	FIRST SNOW	MINCE PIE	RELATIVES	WHITE MEAT
CHESTNUTS	FOOTBALL GAMES	MOLASSES	ROAST TURKEY	WHITE WINE
CINNAMON	FRUIT	MORE GRAVY	SAGE	WING
CLOVES	GAMES	NEW WORLD	SALT	YAMS

### Word Values

_____	45	_____	74
_____	69	_____	80
_____	70	_____	104
_____	71	_____	114
_____	73	_____	700

Mail completed coupon or facsimile to Talking Turkey, Softalk, 10432 Burbank Boulevard, North Hollywood, CA 91601.

What the turkey said to me in the November *Softalk* contest was \_\_\_\_\_ I've examined the ads in this issue, and the prize I choose to receive if I win is \_\_\_\_\_. I accept \_\_\_\_\_ November 30 as the deadline for postmark on my entry.

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City, State, Zip \_\_\_\_\_  
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 Your Autograph \_\_\_\_\_

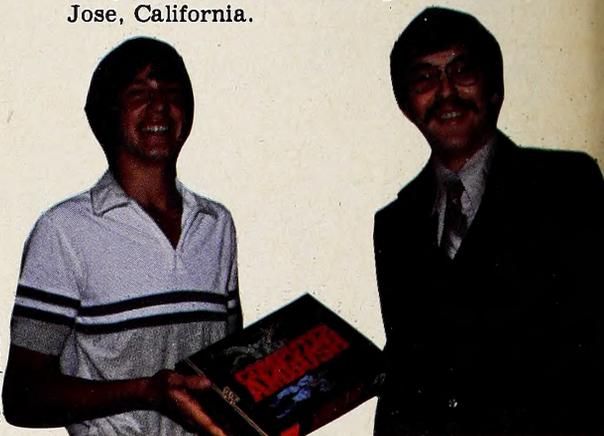
### Answer Format

(Contest is open to all Apple owners and their immediate families except those in any way associated with *Softalk*. Use of computers in deriving answers to this contest is strictly encouraged. Multiple entries are acceptable, but you may not put more than one entry on a coupon; you may mail several coupons in one envelope, however. Photocopies of the coupon are okay, as are handmade copies on a plain sheet of paper, the stationery of the motel you stayed in last summer, margins of old alumni bulletins, valuable stock certificates, whatever, as long as they're legible and reproduce the entire coupon.)

Most of the results of September's *Softalk* contests are in; and the big winners in the bestseller predictions are Mark Korenkiewicz of Albuquerque, New Mexico, and the Easter Seal Society of Little Rock, Arkansas.

Early winners of the Conpeople contest are Harvey Shapiro of Northridge, California, and Jan Halsall of Algonquin, Illinois. Other winners are yet to be named.

Also, as we will do from time to time, we chose to take note of a *Softalk* milestone by awarding a surprise prize—in this case, the milestone was the first entry ever in any *Softalk* contest. The early bird was Bert Dellagatta of San Jose, California.



Bert Dellagatto, fifteen, San Jose, receives a copy of Computer Ambush from Joel Billings, president of Strategic Simulations. Bert, who earns money to support his Apple habit by carrying eighty-six San Jose Mercury News papers each morning, earned his prize by being the first entrant ever in a *Softalk* contest.

**The Prognosticators.** The major contest for September involved predicting the results of *Softalk*'s first software bestseller poll. Deadline for entry was September 15, because at that time the

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Softalk Publishing Inc. distributes *Softalk* magazine free of charge to owners of Apple computers. Our circulation lists are extensive and growing, but there are still several thousand Apple owners unknown to us.

If you received this issue of *Softalk* in the mail and have not mailed in a sign-up coupon, you'll probably need to fill out this coupon or the insert to continue receiving *Softalk*.

However, if you bought this issue of *Softalk* at your local computer store, or if you're reading it at a friend's house, you'll surely need to fill out the coupon (or a facsimile of it) to ensure receiving the magazine regularly. Be sure to include the serial number of your Apple; you'll find it on the bottom of your machine.

An alternative to filling out the coupon is to ask your dealer if the store participates in *Softalk*'s dealer mailing program. If it does, your dealer can make arrangements for you to receive the magazine.

Additional copies of this issue or back copies can be purchased directly from Softalk Publishing Inc. for \$2.00 each.

# Some Contest Winners Here!



Softalk photo

Left: Gene Sprouse of Rainbow Computing, Northridge, California, presents Harvey Shapiro of Northridge with a copy of *Bloody Murder* for being a winner in Softalk's Conpeople contest. Shapiro, fourteen, is a hot-shot in Basic and is now tackling Pascal. Right: Jane Halsall, Algonquin, Illinois, receives her Conpeople prize from Steve Shendelman, manager of Data Domain of Schaumburg.



Data Domain photo

results of the poll were on the way to the printer, preventing *Softalk* from ensuring their confidentiality.

For various reasons, hundreds—perhaps thousands—of Apple owners did not receive their copies of *Softalk* by the deadline. To those who sent us letters ranging from politely chiding in tone to outright hostility, *Softalk's* apologies. To those who recognized the spirit and not the letter of the rule and submitted their entries anyway, all entries received by September 30 were considered, no matter when postmarked. As it happened, all winning entries were submitted before the printed deadline.

Another problem arose because of an unforeseen ambiguity in the rules. The predictions should have covered the full scope of all software available for the Apple, with the only restriction being that the prize won must be selected from among the products manufactured by *Softalk's* September advertisers.

However, eighty-five entries—too many to be a coincidence—read the rules as limiting their predictions to those products advertised in the issue. These entries were judged separately and a second winner declared.

Both configurations of predictions resulted in a tie, in each case broken by Apple's random number generator. In the contest as *Softalk* conceived it, Korenkiewicz tied with William DeFresne of Tulsa, Oklahoma, who earns honorable mention.

Korenkiewicz correctly identified the top three finishers in the poll: Personal Software's *VisiCalc*, Sublogic's *Flight Simulator*, and California Pacific's *Bill Budge's Space Album*.

As mentioned in "*Softalk Presents the Bestsellers*" in the October issue, the cumulative weight of the many versions of *Space Invader* would have placed that program second had only one company published the game and, therefore, an alternate set of winners to reflect this phenomenon was accepted. Under this ground rule, DeFresne also correctly identified the top three finishers: *Visi-*

*Calc*, *Apple Invaders*, and *Flight Simulator*.

In the alternate judging for those who read the rules as limiting their selections to *Softalk's* advertisers, there was a three-way tie. Apple's random generator selected the entry of Bob Taylor, who entered for the Easter Seal Society of Little Rock, Arkansas. Others who matched his prognosticating ability were Bill Burke of Fountain Valley, California, and M.L. Field of Oxnard, California.

Korenkiewicz chose Personal Software's *CCA Data Management System* as his prize. Taylor, choosing for the Easter Seal Society, chose the *Micro Music Board*.

**The Criminologists.** Extra winners were also called for the Conpeople contest, which asked entrants to identify correctly famous conners Henry Gondorff and Christine Vole. Contest rules were that the first correct entry would win a copy of Stoneware's *Bloody Murder* and that a drawing from among all other correct entries submitted prior to October 31 would be held to award a second prize.

Unfortunately, the rules weighted the contest in favor of Pacific Coast residents, who received their copies well ahead of the rest of the nation. To be fair, *Softalk* decided to divide the country into three zones and to award a prize to the first correct entry from each zone.

Shapiro is the West Coast winner and Halsall is the Midwest winner. As of this issue's press time, Easterners were still taking their time about coming up with a correct response. Assuming one does, the East Coast winner and, in any event, the drawing winner and the answer will be announced in December.

**The Early Bird.** Dellagatta's contest entry, a bestseller forecast, arrived at *Softalk* two days before other entries started rolling in. Because his promptness won Dellagatta the position of being the first entrant in any *Softalk* contest and because the arrival of that first entry was pretty exciting to our staff, *Softalk* arranged to award him his chosen prize, *Computer Ambush*. Joel Billings, president of Strategic Simulations, personally made the presentation. ■

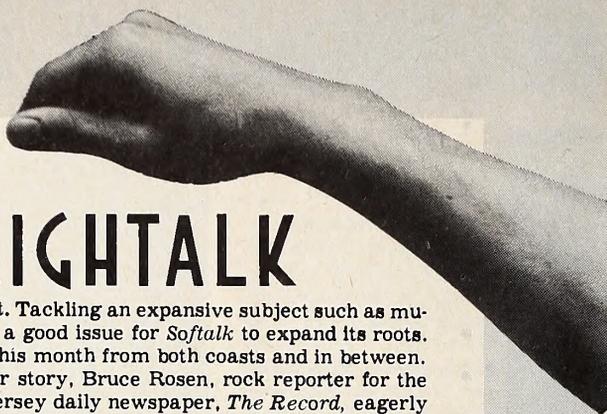
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# STRAIGHTTALK

**Reaching Out.** Tackling an expansive subject such as music, this seemed a good issue for *Softalk* to expand its roots. Writers join us this month from both coasts and in between.

For our cover story, Bruce Rosen, rock reporter for the northern New Jersey daily newspaper, *The Record*, eagerly made the trek to Woodstock, New York, to visit Utopia stars Todd Rundgren and Roger Powell. Utopians don't grant every interview request, but they love their Apples and that made the difference.

Out of the Midwest *Softalk* was fortunate to draw Voyle Glover. A freelance writer mostly of fiction, Glover has been tempted into dabbling in computer articles since he purchased an Apple two years ago for word processing.

Craig Stinson, who spent evenings and weekends for two months engrossed in Apple music systems, was born in Minneapolis and spent two boyhood years in India. Later, he settled in Boston where he wrote on musical subjects for the *Christian Science Monitor* and other publications. Presently, Stinson lives in California.

**A Story to Come.** Sheri Talbott, vice-president of new products and a pivotal member of the design team at Mountain Computer, does not appear in *Softalk's* "Exec Mountain" article. Instead, you'll hear about Talbott, in detail, later this winter when *Softalk* will present a theme issue to which her story is central.

**Happy Holidays.** Saint Nicholas's version of the *Great American Probability Machine* (with a tip of the hat to Bruce Tognazzini) projects that *Softalk's* readers should have the merriest of holiday seasons and a fruitful 1981.

MCT

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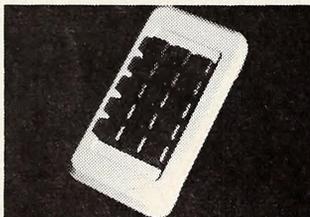
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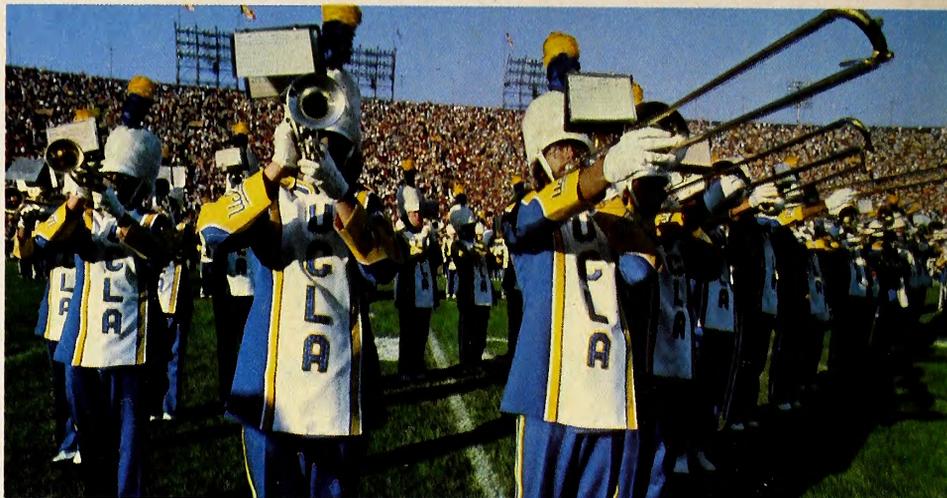
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UCLA photo



Marc Silverstein programmed his Apple to plan and keep track of uniforms for every member of the UCLA band.

Seftak photo

# UNIFORMS / APPLE

BY MATTHEW YUEN

When the UCLA marching band takes the field, four of its members would rather be playing an Apple than playing a sax, oboe, or glockenspiel. Of the two hundred collegians in the University of California at Los Angeles band, whose majors range from biochemistry to theater arts, these four own Apple computers.

**Valet to Two Hundred.** Fitting and assigning seven-piece uniforms to two hundred people is no easy task; and doing it in four days during marching-rehearsal breaks adds no pleasure to the job. Marc Silverstein is one man who did it, and the Apple II Plus is the computer that helped make it possible.

Silverstein took the position of uniform manager last spring. A few months after that, he switched off his Commodore Pet and switched on a new Apple. His system consists of the basics: an Apple II Plus with 48K memory, an Apple disk

drive, a monitor, and the Apple Silentype printer.

Having watched uniform crews before him suffer and sweat through countless man-hours at the job he was to assume, Silverstein decided that his Apple was just the tool to eliminate the suffering and reduce the number of hours spent in the uniform room.

Time is saved by a data base program that Marc wrote specifically for the job. As each person is entered, a record is immediately filed alphabetically. Information is also available by cross-indexing six different ways: by instrument, by glove and spats sizes, and by coat, pants, and shako numbers.

**Learning Computer Easier Than Clipboard.** The program also adapts itself to each musician's needs according to the instrument he or she plays. "If 'percussion' is entered, it will ask for shirt, hat, and glove sizes only (percussionists do not wear the regular uniform); or if 'tuba' is entered, it will not assign a

shako, but a beret instead," Silverstein explains.

As each uniform part is assigned, its number is checked off the original stock file on the disk and entered in the musician's record. When a full uniform is assigned, a contract showing the person's name, instrument, uniform part numbers, and costs of each (in case any should be lost or damaged) is printed out on the Silentype, signed by the band member, and then physically filed.

"The best part about this system," Silverstein says, "is that teaching the rest of the uniform crew to inventory and check out uniforms with the Apple is much easier and ten times faster than teaching them to do it with a clipboard and hundreds of index cards."

Silverstein's uses for the Apple do not end in the uniform room. Silverstein is the president of his fraternity, Kappa Kappa Psi. He uses the Apple Writer text editor to send out letters and notices concerning meetings and activities to fraternity members.

**Computerist Scores with Apple.** Dennis Hescoc, a computer science major specializing in microcomputers, who works as a systems programmer during the summer, looks more at the potential musical capabilities of his Apple.

"Sometimes several instruments will be playing the same melodic line, but each part is written separately with different notes. Since music is entirely mathematical, the Apple could make the appropriate transposition for each instrument, and then print out the part." This would save hundreds of man-hours, as well as eliminate human mistakes.

On the games side of his Apple, Hescoc is a Scott Adams fanatic, having in his collection every offering from Scott Adams' *Adventure* series.

**3-D Apple on DEC with Fortran.** One serious computer buff is Calvin Mah, a

sophomore who has had his Apple for about half a year. Unlike Silverstein or Hescoc, Mah uses his Apple strictly for computer science applications. Mah's system is hooked up to UCLA's main computer on campus, the DEC 10, through a Novation Cat modem.

Mah has neither a disk drive nor a language card; but through the modem he is able to program in Fortran, his preferred language. Mah's current project involves three-dimensional plotting programs; in the future, he and Hescoc plan to team up and develop their own compiler and interpreter.

**On the Road with Band and Allens.** In October, when the Bruins clashed with the Golden Bears of the University of California at Berkeley, the band took an Apple; and this time it had nothing to do with music.

For the marching Bruins, the fourteen-hour bus ride to the Bay Area is usually highlighted by a "Rock, Paper, Scissors" tournament. This year, with the help of the Apple II Plus, a portable television, and an Apple Juice power supply, the tournament was *Space Invaders*, *Asteroids in Space*, *Tranquillity Base*, and the usual line of *Pong*-type games.

Perhaps the band members could lend the football team one of their Apples to psych up for the game with a few rounds of Strategic Simulations' *Computer Quarterback*. ■

*The fourth member of UCLA's band who owns an Apple wrote this article on it: he is the author, Matthew Yuen. Yuen, a senior prelaw major and alto sax player, interned as an editorial assistant at Softalk this past summer.*

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Or charge by phone: (800) 824-7888, operator 861. In California: (800) 852-7777, operator 861. If you prefer, call these numbers for a list of the computer stores near you.

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# Blind Pathfinder in Alaska

BY MARGOT

(OMSTOCK TOMMERVIK)

If you spend some time watching local television talk shows in Anchorage, Alaska, you're apt to catch one of Anchorage's favorite people, Louise Rude.

A gentle-appearing woman of around sixty with a generous, richly flowing voice, Rude by no means spends all her time guesting on these shows.

As you hear her speak of the things nearest to her heart—of her plans for helping the blind and the deaf; of her determination to correct the attitudes of the world toward the handicapped; of her adamant belief that fear and discouragement are the worst handicap for a handicapped person; and of her enthusiasm for spreading the realization that the blind are not helpless, but only different—then you'll realize that this popular personality is a moving force, a fighter.

**Eyesight Isn't Everything.** In 1973, a year after losing her husband, Louise Rude lost her eyesight. Despite the devastating effect of these two events occurring so close in time, Ms. Rude, in full agreement with her employer, dealt herself still a third blow: she resigned her job, ending a twenty-year career as account executive on Anchorage, Alaska, newspapers.

Naturally, since she couldn't see, she couldn't continue with her work, both Rude and the newspaper management thought.

Today, Rude thinks differently; and she believes the time far overdue for employers to change their thinking, too.

"When I first lost my sight, I experienced the sense of panic and despondency that I've since found to be shared by all the newly blind," says Rude. "But it isn't true. There's plenty of life to be lived in the world, and I can do all of it. The only things a blind person can't do, if she's willing to try, are read print and drive a car. Why, I could even fly a plane, with touch instruments!"

Rude used to be a pilot, so she knows whereof she speaks.

If she'd known in 1973 what she's learned since, Rude would never have left a career she loved just because she couldn't see. You do not need to see to speak well to clients on the phone; nor to share luncheons; nor to keep records; nor to schedule appointments in the busy daybook of an active physician.

Do you?

Dr. Kenneth Richardson, an Anchorage ophthalmologist, didn't think so. He approached Louise Rude some time

ago about filling just such a position in his office. He wanted the person who dealt with his patients, scheduled their appointments, answered their questions, and calmed their anxieties to be someone they would feel as comfortable talking to as they would him.

"It's because you are blind that I want you," he told Rude. "You will *hear* the patients."

And she does.

**Apple Talks Back.** Louise Rude schedules, comforts, chats with sixty to seventy patients a day, who are scheduled at three different sets of intervals for the three doctors with practices in Richardson's offices. And often, when the patients are silent, an Apple chats with Louise Rude.

When she first went to work for the doctor, Rude used a pegboard system with paper tape headers in Braille to keep track of appointments.

Then Richardson bought an Apple and, with the help of Chuck Kurtzman, a physicist from Baylor University in Houston, Texas—to which Richardson commuted weekly for three years to work on a computer project on glaucoma—developed the software to make the Apple into a talking calendar, scheduler, and data base for Rude to work on.

Using a 48K Apple II Plus, two disk drives, a set of paddles, and a SuperTalker from Mountain Computer, with the scheduling program by Richardson and Kurtzman, Rude can search for open appointments of appropriate length, check on and type in patients' names and notes on them, and confirm or deny appointments. If an emergency forces the canceling of a day's appointments, Rude and the Apple can inform affected patients and reschedule all appointments.

Rude's input is given through the Apple keyboard and through paddles used as yes or no inputs; Apple responds via the SuperTalker. When she types on the computer, Apple speaks each letter as it's typed. As she backspaces to correct a typo or make a change, Apple speaks the backed-over letters.

Although, in experimenting with the system, Rude and Richardson at first found listening to the spoken letters a slowing feature, they believe that, before long, blind typists will become as adept at hearing the letters only when they're wrong as sighted typists are at noticing only the wrong letters on copy.

According to Richardson, there are still some bugs in the system. When they are worked out, it can be assumed that the talking Apple will be made available to other doctors who are willing to hire office assistants whose abilities to see are



Louise Rude believes many jobs can be saved for people who go blind. "If you feel your vision going, go to the nearest Vocational Rehabilitation Center or chapter of the National Federation of the Blind for help." They can train many people to do their present jobs without sight.

## You Can Help

- Act Normal. There's nothing different about blind people except that they're blind. That's the *only* difference. Do you become a different person when you close your eyes?
- Don't grab a blind person; usually, if he needs help, he'll ask. If you're convinced that help is called for, offer your arm. The blind person will take it.
- If you have business with a blind person, talk directly to that person, not to the sighted person accompanying him or her.
- Speak in a normal voice. Blind people are blind, not deaf or retarded. Yet many people shout or overenunciate when speaking to them. If you're trying to think very hard or deeply or if you're straining to hear, what do you do with your eyes? You close them; you don't need sight to think or hear. Neither do they.
- Don't be uneasy. It isn't up to you to be nervous lest the sightless trip or bump into something in a normal situation; they probably won't. So don't interrupt your conversation at a party just because a blind guest gets up to freshen his drink. Would you like conversation to stop the minute you made a move?
- Don't awkwardly avoid acknowledging the blind person's blindness; he already knows about it. Avoiding references to sight or things you see are foolish. If you feel like commenting on a lovely sunset, do so. Blind people live in the same world you do; you won't be teaching them new words. But, just for a moment, you might be providing them with eyes.
- Be considerate. Don't rely on your hands and face to make a point and don't tell a visual joke without describing it. If there's something happening that requires sight, provide it with words. ▣

hindered only by the lack of working eyes.

Unfortunately, the project is now on a back burner and Louise Rude is working again with pegboard. The problem? Only one Apple—and a very active Richardson. The Apple has been confiscated to work on another project to which Richardson has given precedence: electronic publishing—a plan to distribute information to medical offices instantly and regularly through the Apple. The name of this project, still in its preliminary stages, is Medical Synergy.

**The Noisemaker.** Louise Rude listens to more than the doctors' patients. She also hears the other blind people in Alaska, and the deaf, and the lame. Formerly president of the National Federation of the Blind in Alaska, Rude remains extremely active in working not only with blind people, but with the deaf-blind and otherwise sensorily handicapped, through a private facility she was instrumental in founding and that bears her name, the Louise Rude Sensory Impairment Center of Anchorage.

Asked why this important organization for care and schooling bears her name, Rude responds, "There were many of us involved in making the center a reality; I suppose I just made the most noise."

Rude's major interest remains with the blind, not only because of her own blindness, but because there is an especially high incidence of blindness in Alaska, having to do with the climate and, in native Alaskans, with genetic strains.

She believes the center is an important facility for the blind in many ways, but one of its most important functions is met by its dormitory for the newly blind. Kindly people tend to avoid sending away from home members of the family who have become blind. In fact, according to Rude, living in a dormitory with other newly blind people can be the best and quickest way for a person to adjust and learn to be independent.

"Newly blind people need the opportunity to learn to do things themselves," Rude says. "The major hindrance to a newly blind person's learning to get along in his new state is kindly families and friends who won't let him try his wings."

Another problem is people trying to help the blind person do things their way. "One of the toughest things for a newly blind person, after accepting her blindness, is learning to do things the blind way and not the way she used to do them when she could see. The blind person needs to learn not to try to do things with her eyes that her eyes can't do."

Living in a dorm with others like themselves helps newly blind people make these adjustments swiftly.

**Many Jobs Don't Really Require Sight.** Most important of all to Louise Rude is the issue of employment for the blind. When blindness is not a result of other

major diseases, such as diabetes (the cause of the majority of blindness), she believes that there is no good reason for blind people not to be employed in many occupations; that they are perfectly capable of handling many of the jobs employers now count them out for because of their inability to see.

"I didn't need to retire from the newspaper," Rude says. "Doing that job without sight would have been no problem, if I'd known how."

"It's crucially important that people know this: if you find your sight is failing, begin at once learning how to do your work without seeing, and get your employer involved in the program to understand the new methods you'll be using and how they'll work. Do everything possible not to give up your job."

The advice becomes even more important after considering employment statistics for this country: of the millions of able-bodied, sound-minded Americans who are classified as legally blind, only three hundred were hired in unsubsidized jobs in 1979.

Dr. Richardson agrees with Rude; he attributes the low incidence of hiring to the tendency of employers to categorize all blind people with the majority—those with diabetes.

"When a person loses his sight because of diabetes, his disease is usually pretty dominant, and his life expectancy is generally not more than five years. When blind people apply for jobs, employers are reluctant to ask the source of their blindness, even though what's really important to them is whether the more lengthy than usual training will be wasted because other manifestations of the underlying disease—if they have it—lead to the employee leaving soon after training is finished.

**Blind Offer Valuable Potential for Employers.** "Unfortunately," Richardson continues, "this tendency to categorize all blind people in the diabetic majority causes a loss of value to employers as well as to nondiabetic blind people."

"When employers do take healthy blind people into their organizations, they find these employees to be tremendously loyal, dependable, and willing workers."

There is no doubt that Richardson has just such an employee in Rude, and there is also no doubt that the loyalty and admiration are mutual.

Even though the "Talking Typewriter," as Richardson and Kurtzman have understatedly titled their Apple-SuperTalker program, has been temporarily tabled, Richardson's thrust remains toward the use of computers in medical applications.

Louise Rude also sees the potential in the Apple for the blind, particularly in regard to employment. "If the article about me causes just one other blind person to get a job—then—well, then, it's very much worthwhile."

It's up to you. ■

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# O P E N D I S

*Open Discussion will regularly involve letters from readers to readers, from readers to authors, from authors to readers, from readers to editors, from editors to readers.*

*So many Softalk readers took the time to send in their "Sign Up for Softalk" coupons, contest entries, and letters that we chose to take the space this issue to say thank you. None of us had realized what a large part of the reward for producing the magazine response from its readers would be. The daily advent of the mailperson became a time when work stopped and everyone gathered to share what had arrived. Softalk is perhaps the only business in existence where everyone is competing for a job in the mailroom.*

*Several letters have questions other readers can help answer, and we hope you will. Once more, thanks to all of you who wrote in or signed up or even just silently enjoyed Softalk number 1.*

## Checks in the Mail

Enclosed is my check for \$12.00 to cover a one-year subscription to *Softalk*.

I was very interested in the programs you reviewed in *Marketalk Reviews*. However, while you do mention the name of the software houses distributing them, you do not give an address, in case they are not available locally. This is the case here in New York State. The dealers either are not willing or are unable to keep up with the latest software.

I would like addresses for the two programs reviewed this month (September), *Real-Time Football* and *Monty Plays Monopoly*. I would also like to recommend that you add the addresses along with the reviews in the future.

Mark J. Conradt, Brockport, NY

*Many people were confused by the required postal information in Softalk's masthead stating the magazine's price as \$12 per year. Several people sent checks, a gesture we found most rewarding in terms of your interest; but all checks have been returned.*

*There is no charge to Apple owners to receive Softalk. It is our intent to provide a magazine you will want to pick up and read, to include articles detailing new uses for your Apple, and to offer honest information about the software and other products that will enable you best to implement those uses. Your support of those products and of our advertisers' products because you read about them in Softalk will encourage advertisers to buy space, which in turn will enable Softalk to continue its policy of mailing to all of you free.*

*The best way for you to make this happen is to tell your dealer when you buy such a product, or to tell the manufacturer when you write for information, that you saw the product in Softalk.*

*Mr. Conradt might have had trouble finding "Real-Time Football" because that is not its real-time name; the program described is Computer Quarterback. Its publisher carried an ad in the September issue, and you'll find one in this issue as well; it will tell you how to reach them. Call Personal Software in Sunnyvale, California, for information on Monty Plays Monopoly.*

*Before you mail to the publishers for the programs, try your dealer once more. If you can encourage your dealer to order the programs you want, you'll be doing everyone a favor.*

## Seven Kids and an Apple

We purchased our 48K Apple II Plus, disk drive, and TC-71 printer so our children could learn computer programming (we have seven kids). My biggest problem is not knowing what

programs to buy. Kids are most interested in programs that have a lot of graphics and animation.

Perhaps in future issues of *Softalk* you could not only indicate the graphics content of the programs (games) that are advertised, but also the age ranges the games might appeal to. Pete Helfrich, Fountain Valley, CA

*We call upon kids with Apples and readers with children to write us about games you or your children have enjoyed and at what age.*

## Postal Pitfalls

How about a little more time on these contests? Remember that our Post Office has not yet entered the electronic age—in fact, I think our local branch is still in the Stone Age!

G. C. Best, Indianapolis, IN

*This is representative of several letters received from readers considerably east of our offices. We must admit, we never expected to need two weeks to get a magazine across the Mississippi. But that's what it took. We're looking into other possibilities for getting the magazine to readers in the eastern half of the country.*

*Meanwhile, there will be no more short deadlines.*

## Give Us the Business

Speaking as an independent data processing consultant to the small business community, I thank you for this first issue of *Softalk*. I also highly recommend the context and content of this first volume, and look forward toward future informative and valuable issues of this magazine.

Larry Chisausky, Riverdale, IL

Please put us on your mailing list. We are in need of more business software articles.

Lynn Schechter, Horizon Textiles, New York, NY

*Softalk is planning a business applications column as soon as a qualified author can be brought on board to implement it.*

## Programming Tip Comes in Handy

I just received my first issue of your magazine. The article entitled "The Basic Con Job" really hit the mark as I am being paid to write a CAI program (in Integer), and I wanted to insert my name in the credits without someone erasing it. I had searched all the documentation I had and had almost given up hope when your magazine arrived. Now, I can have my name in lights indelibly!

Jay Riddell, Hayward, CA

I would like to thank you very much for the "Basic Con Job." I've been looking for such an article for months! Although I realize your magazine is not a programming magazine, please keep up the good work; let's have another "Con Job" next month!

Brian Domino, Tucson, AZ

## Prefers Pascal

I'm pleased with the first issue of *Softalk*. I'm particularly interested in Pascal software and applications.

Vincent D'Amico, Watertown, MA

*We anticipate beginning a Pascal tutorial as soon as Softalk gets slightly larger; the writer is a longtime expert in the language.*

# C U S S I O N

## Data Glows—But Dimly

A comment—the article "Dealing with DOS" by Bill Depew contains excellent information but the writing is unclear and gleaming the grist is difficult.

However, I am impressed and look forward to receiving the magazines.

Doug Jones, Frisco, CO

## —Or Brightly

I liked your September 1980 issue a lot! Please continue to have articles like "Dealing with DOS from Assembly Language" and "The Basic Con Job." Many of us more advanced Apple users would rather read this than "Apple Helps the Empire Strike Back." However the whole issue was very good.

David Neiss, New Canaan, CT

## A Softalk Undergrad

Thanks for sending *Softalk*, it looks great. I'll be looking forward to the "tutorial" articles. I need them.

Joe Rakosky, Morton Grove, IL

*Let us know how you're doing with the tutorials, Mr. Rakosky, and don't hesitate to send in questions for the authors.*

## References Wanted

As a "new" computer user, I am particularly interested in learning how to use the Apple's capability and how to select and use software—a data base management system, *VisiCalc*

(or its equal), and a word processor. So far, salespersons and corporate literature are not too objective. Therefore, any articles you run evaluating Personal Software's *CCA (Data Management System)* or others would be appreciated, particularly technical descriptions of capabilities and limitations.

You mentioned other periodicals. Please give me references to *Apple Orchard* and *Call A.P.P.L.E.* I have begun a subscription to *Creative Computing*.

N. J. Wood, San Jose, CA

*We welcome short letters of recommendation by users of various data base and word-processing programs. Detail the program of your choice, the application for which you use the program, and the one quality that most makes the program the best for that application.*

*Mr. Wood's desire to be a very well-read computer owner is easily fed. Apple Orchard is published by the International Apple Corps at \$10 a year for four issues; write to Apple Orchard, P.O. Box 2227, Seattle, WA 98111. Call A.P.P.L.E. is the publication of the Apple Puget Sound Program Library Exchange. Membership costs an initial fee of \$25, thereafter \$15 a year dues. Write to Membership and Orders, 517 11th Avenue East, Seattle, WA 98102.*

## Organizing Hoosiers

Several Apple owners in the Indianapolis area are trying to form an Apple users' group. Apple owners in the Indianapolis area interested in such a users' group may send inquiries to



BY BILL BASHAM

## A NEW CHALLENGE

DOG FIGHT will capture your imagination. You are the pilot of a jet going into combat. You may fly alone on this mission, or you may have another pilot flying with you to defeat the enemy. First you fly against one enemy jet. You are in complete control: fly faster or slower, turn left or right — but most importantly, FIRE. If you are shot down, and you act quickly, you can bail out. You and your parachute float gently downward, hoping an enemy plane does not shoot you. If you survive, you will quickly return to the fierce dogfight. The enemy can also bail out!! You must shoot him down before he has a chance to return.

## THE ENEMY RETURNS

Each time you defeat all enemy jets or helicopters, you advance to the next

level where you fly against faster and/or more enemy planes. There are sixteen levels of difficulty to fight through. Bill Basham, the talented author of this high resolution program, has made it through only 8 levels before his planes were destroyed.

## MANY WAYS TO PLAY

DOG FIGHT may be played in several different ways. You, alone, may challenge the computer, or, two players may fly against the computer — either on the same team or on different teams. With DOG FIGHT you can create your own custom game with as many as eight players crowding around your Apple keyboard controlling their own planes. You may select jets or helicopters on any level — be a daredevil with 7 computer jets against you. You are in charge with the custom mode.

## NEW FOR THE APPLE

## FOR THE ACES

Micro Lab will award a special achievement plaque to the first 10 pilots who reach 10,000 points in any of the auto modes (one player, two players same team, two players different teams). A special, individual, secretly coded message will appear when reaching that score. Report that code to Micro Lab to claim the Ace title.

## AVAILABLE NOW

The Dogfight is available on disk at your Apple Dealer for \$29.95.



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# O P E N D I S C U S S I O N

me at Box 145-9 Diplomat Court, Beech Grove, IN 46107.  
John T. Haver, Plainfield, IN.

## News Support

Liked your Newspeak and Tradetalk columns. "Exec Apple" also good.

R. C. Brown, Rochester, MN

*We hope that R. C. Brown and any others of you who like Newspeak will participate in submitting items for that column from your localities.*

## Couch Support

I am certainly one for "datagramming." I hope Mr. Couch can install development of that type of program. We, the nonprogrammers, need it.

C. F. Garcia, Owasso, OK

## I Happen To Like New York

Your approach to meeting the needs and interests of Apple owners is, in a word, great!

I and fellow members of the Big Apple Users Group are looking forward to receiving *Softtalk* regularly.

Bob Builder, Scarsdale, NY

## No Searching for Page 72

I received the first issue of *Softtalk* yesterday.

It is a pleasant change to see publishers paying more attention to the Apple people.

It is more satisfying, and informative, to have a publication devoted to one's own machine than to have to scan all the way through a bunch of stuff to find one casual reference to it, on the bottom of page 72.

I do not wish to appear biased, nor over sensitive, but I looked a long time before picking my Apple, and I didn't buy it because it was cute, but because I was convinced that it was an enormously capable machine, for a very reasonable price.

And besides, it is kinda cute . . . and any Dumb Publisher who treats my Apple like a page 72 item is a . . . ahem.

Better cool it. This does have to go through the mails.  
Howard Benson, Pomona, CA

*We bought ours for the same intelligent reasons, Mr. Benson, the facts that we talk to it, stroke it, cover it at night, and set a place for it at the dinner table notwithstanding.*

*That's also why Softtalk is only for the Apple. And besides, our Apple's more photogenic than those other brands. . . .*

## Pretty Punny User Group

Please send me *Softtalk* FREE. I am vice-president of Mini'app'les computer club.

Stephen K. Johnson, Minneapolis, MN

## Move Over, Time Inc.

I love your new magazine and I think it will be very popular. . . . My opinion of your magazine is that it is "a *Newsweek* for the Apple."

Keith Hildreth, Williamsburg, VA

## It's Our Pleasure

A great first edition. You have a bright future.

Art Priebe, Albuquerque, NM

*Thanks to all our readers for such a warm welcome. And, Mr. Priebe, we hope you are clairvoyant.* ■

Direct your letters to Open Discussion.



□ **All About Apple.** One of the amazing things about this burgeoning young industry is its youth. If this seems a tautology, it is, but the warping of time is so great that it doesn't cease to be a source of astonishment. The best-known, established software houses—the old-timers in the industry—have founding dates in 1978 and even 1979. Zooming to the top of our best-seller list are products of companies that have been in business all of six months. "Newcomers" are even younger than this.

Of course, regarding the segment of the industry we're involved with, none of it would be possible without Apple Computer Inc. And Apple Computer—inc. or not—has yet to see its fifth birthday. In 1976, its two young founders sold one of their cars to finance the parts for building the product to fill their first major order for Apples—then Apple I computers. To make it even stranger, that deal fell through. Apple's deals haven't been falling through since.

Today, four short years and the entire life of the industry later, Apple is a multi-million-dollar corporation with facilities spreading throughout the world. And therein lies the news.

In the last two months, Apple has opened seven new facilities, two for manufacturing and five for distribution and support. Even more significant, two of the new facilities are abroad.

Cork, Ireland, is the home of AppleEIRE, a manufacturing facility to serve European customers. Located on eighteen acres, AppleEIRE will employ nearly seventy people immediately; it's expected to expand to 400,000 square feet and more than a thousand employees by 1985. Backing up the Cork fac-

tory is a new distribution and service center in Zeist, Netherlands.

The new stateside Apple centers for distribution are in Boston; Charlotte, North Carolina; Carrollton, Texas; and two more in California, in Sunnyvale and in Costa Mesa. The Texas facility houses the second new manufacturing plant as well as the service center.

Regionally organized support centers increase the efficiency of service to more than seven hundred fifty Apple dealers and, consequently, to Apple owners. Centers handle warehouse and product distribution activity; service, sales, and applications support; and financial and credit functions.

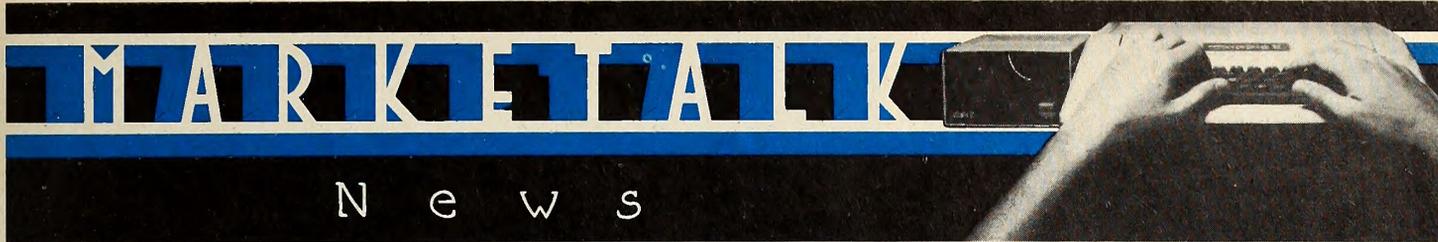
Since January 1979, where there were 130 employees and 80,000 feet of floor space, Apple Computer has spread to occupy 560,000 feet of floor space and has increased its corporate population to 580 employees.

□ **A Human Computer.** Charles Trois's computer could pick hit records, according to Trois. He explained that his computer would digitally reduce tunes to their component parts, then rate them against 22,000 songs.

Trois and his computer had an excellent record: they showed an 82 percent success rate in selecting hits.

The phenomenon caught the interest of Mike O'Connor of KRON-TV in San Francisco. O'Connor's investigation led to unexpected results.

Trois does have a computer; but his computer is not programmed. The "hit-picker" consists of an unemployed waiter from Nashville, Tennessee, who sits inside the "computer" and helps Trois pick prospective hits. ■



□ Variation on a theme—**Rainbow Computing** (Northridge, CA) introduces *A Stellar Trek*. No kidding, it's *Apple Trek*, Apple's *Startrek*, in hi-res and bright color. *Enterprise* is a real spaceship; Klingons come in three flavors—regular, commander, and fleet commander—each's demise worth a different point bounty; additional enemies lurk lazily in the guise of Romulons. There's extra help in that bases don't disappear, but they can be attacked by Klingons; black holes are a good escape hatch and may up energy a lot—or may cause damage; bases will send help if *Enterprise* needs it, can even supply a second—albeit weaker—starship. In addition, dilithium crystals aren't automatic, but must be mined on planets; destroying Klingons increases time; Klingons can't shoot torpedos, but *Enterprise* can't move and shoot at the same time; novas and supernovas occur randomly or because of damage to stars; attempting to travel through or over quadrants destroyed by supernovas is fatal; universe is not infinite, and travel beyond its bounds leads to unpredictable problems. Graphics are bright and finely drawn, and *Startrek* fans will enjoy individualized crew members who report on their various areas of expertise. 48K Apple with Applesoft, disk drive. \$24.95.

□ **Connecticut Information Systems** (Bridgeport, CT) is offering the *Apple Record Manager*, a data base allowing complete file search and manipulation, twenty fields for user-defined categories, ability to browse through files by page, and printer dump. System can be enhanced with add-on modules. Pre-Edit allows user to set up edit parameters against which all new entries are checked. Statistics Interface allows use of diverse statistical tests on file fields. Check-Book Summarizer enables checking account files and includes reports tailored to this purpose. *Record Manager* requires Applesoft in ROM, 48K RAM, disk. \$35.00

□ **MUSE Software** (Baltimore, MD) announces *Super-Text II*, an enhanced version of their earlier word processor. Package comes with program disk and backup.

According to Jim Salmons, director of sales and marketing, documentation has been completely rewritten for clarity and simplicity.

New *Super-Text* features print and preview mode. Input and edit modes remain in a 40-column format. In preview mode, 40-column display becomes a window to a formatted 80-column page. Viewing the full page through the shiftable window allows the user to adjust line endings, determine page breaks and generally get a feel for the layout of the document prior to the first printout.

Package also includes a wire for installation of a shift-key modification, allowing escape from ESCape, should the user so desire, at the expense of losing Apple's warranty.

MUSE allows dealers and consumers a \$100 trade-in on old *Super-Texts* toward the purchase of *Super-Text IIs*. Users can also get a \$50 trade-in on certain other word processors. All trade-ins require proof of purchase and must include original documentation of program being exchanged.

MUSE has tailored the trade-in program for implementation by dealers. In areas where no dealer is participating in the program, company will make the exchange directly with the user. Requires 48K, disk, \$150.

□ **High Technology** (Oklahoma City, OK) introduces the *Order Scheduler*. Compatible with the *Cashier*, program maintains up-to-date purchase order information including total items on order, shipping schedule, total items to be shipped on scheduled day, backorder quantity. Can also track incoming orders. Allows more than five hundred purchase

orders on disk. Five reports can be generated, although two require Inventory file from the *Cashier*. Independent reports are Account Status, Demand and Projected Sales, and Order Schedule. Author is Steve Williams, who did the *Cashier*. \$150.

□ **Micro Lab** (Highland Park, IL) is now marketing its first game for the Apple. *Dogfight* challenges one or two players to simulate air combat with either jet fighters or helicopter. Players can either team to fight the computer or play each other. In a custom mode, as many as eight players can do combat in an environment they can construct.

There are sixteen levels of play. The difficulty of the advanced levels is indicated by the fact that the creator of the program, Bill Basham, has only successfully negotiated the first eight levels.

A unique, secretly coded message has been recorded onto each disk. Any player who reaches 10,000 points will trigger the message. The first ten players to report their coded messages to Micro Lab will receive special achievement plaques. Requires 32K and disk drive; boots on both DOS 3.2 and DOS 3.3 systems. \$29.95

□ **Modular Software** (San Antonio, TX) announces two products: a *Pascal Reference Card* and the *Autodialer II*. The *Pascal Reference Card* assembles onto one folded letter-size card almost everything needed to program in Pascal: ASCII chart, procedure and function definitions, reserved and predefined words, I/O error return, setup parameters, P-code chart, and operators with precedence. *Autodialer II* allows

GOTO 36

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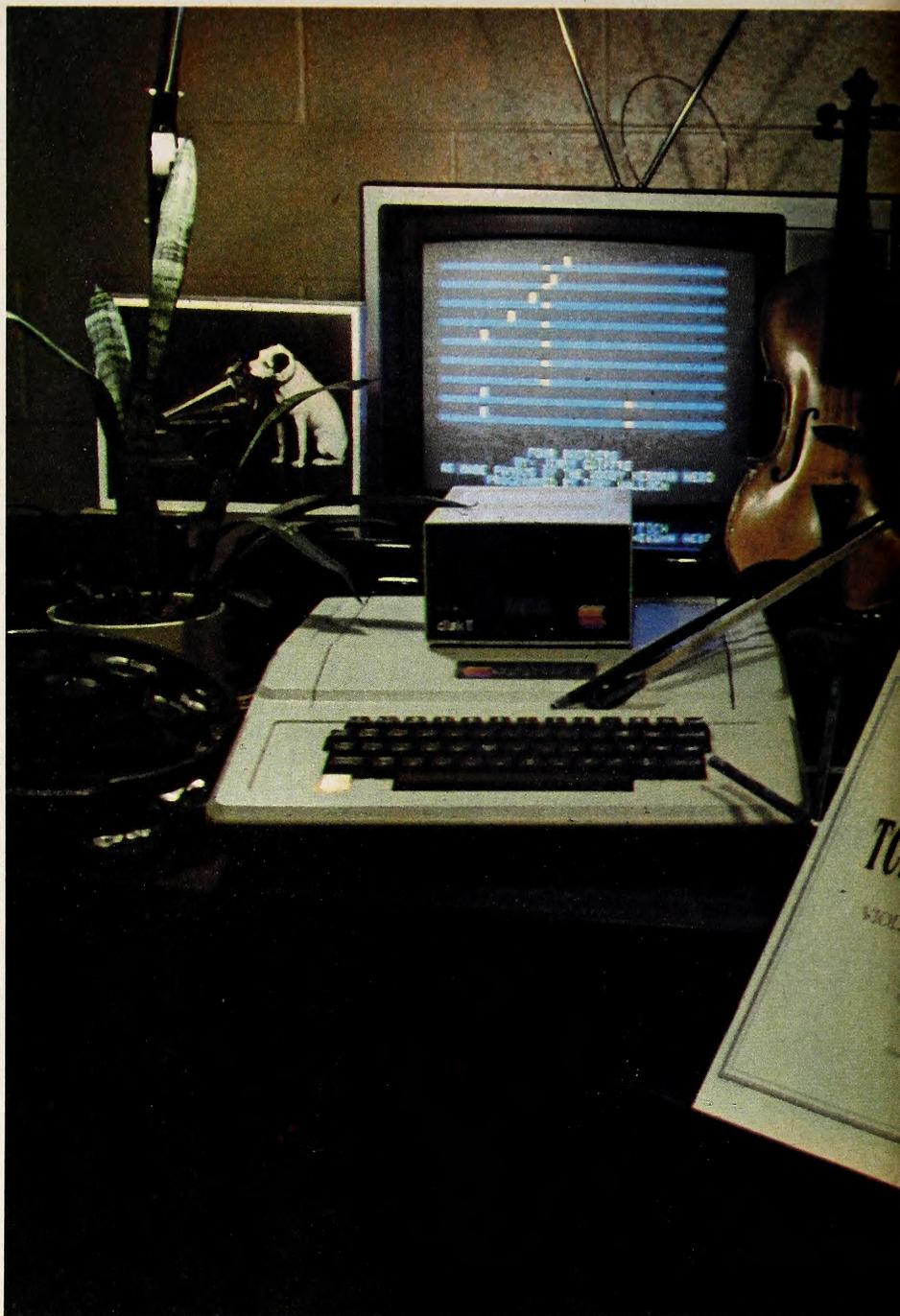
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**SOFTAPE**

BY CRAIG STINSON

# ALF, Mountain, American Micro Present



## The All-American Apple

There is an advertisement for the ALF Music Synthesizer that shows a wild and crazed young fellow whooping it up on something rather like a guitar. On inspection, the instrument turns out to be a guitar fingerboard attached to an Apple computer.

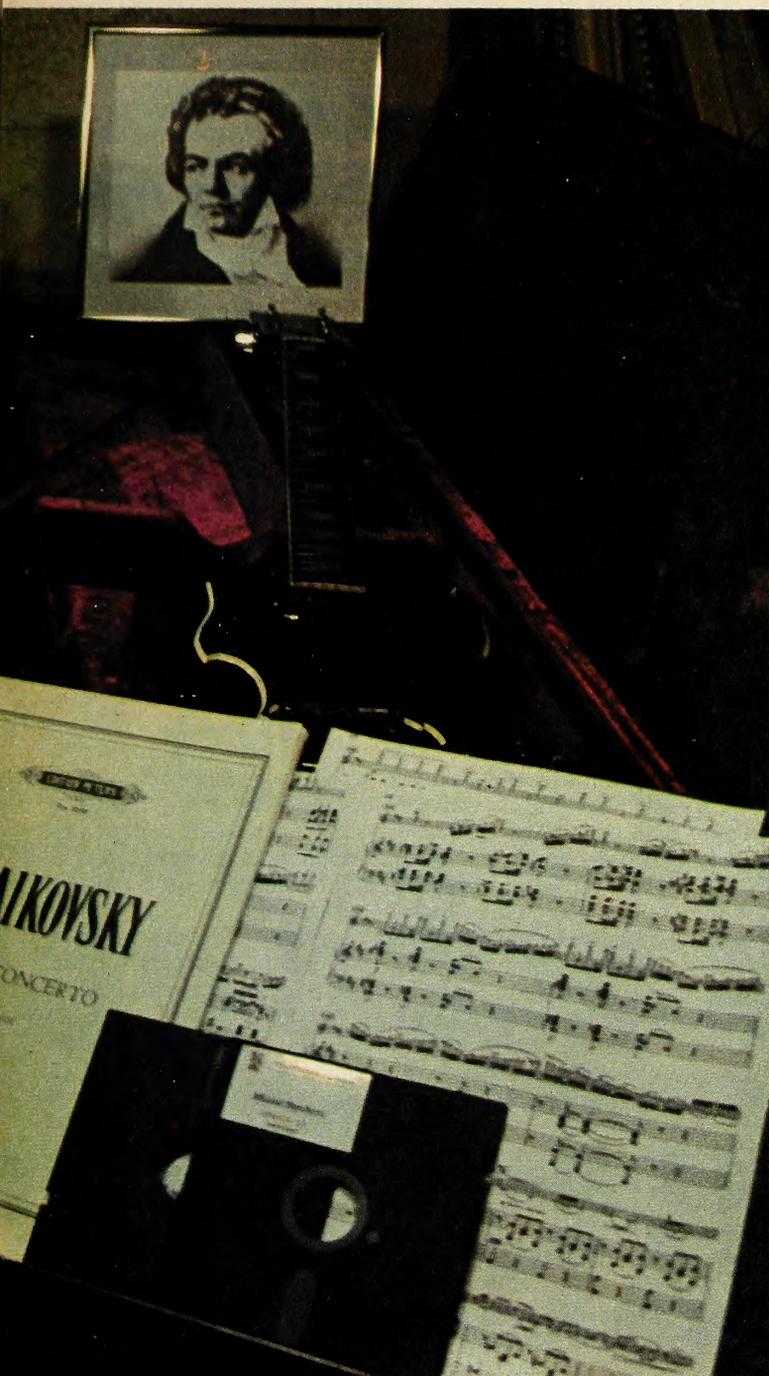
Catchy ad, to be sure, but it understates the potential of the ALF, or of the comparable music synthesizers made by Mountain Computer and by American Micro Products. For with these systems your computer and you will do many things you could not do on a guitar. That ad, in fact, might more appropriately have shown the Apple giving birth to a small orchestra, or rock group, or jazz band, or some other multivoiced aggregation.

Reviewing these systems over the past weeks has taken me on an exhilarating emotional trip, from bemused skepticism—

I like live music, played by breathing, sweaty musicians—through mild engagement and curiosity, into concentration and a high level of excitement. Finally, the more I worked and played with these wonderful devices, the more my brain danced with the possibilities they revealed.

**The Second Time Around.** Are you, for example, one of those people who wish that someone had leaned on them a bit as kids to make them learn an instrument? Well, here's your second chance. With a computer synthesizer, you can get actively involved in music as an adult, without having to develop the physical dexterity that instruments demand.

When you compose, arrange, or simply re-create music through an Apple-based synthesizer, you can get some of the experience of intimate contact with music that a performer enjoys.



# Music Machine

Or, if you happen to be in the market for something like an electronic organ to provide home entertainment, you might also want to consider a computer music system. For one thing, if you already own an Apple and a stereo, your cost will be at most in the range of a really cheap and really crummy spinet piano.

Although it may not make certain kinds of sound colors that a typical electronic organ will, the synthesizer will make many others that an organ will not; moreover, in the process of creating music on the synthesizer, you will learn much about music and the nature of sound—more, possibly, than you ever thought you wanted to know.

All three of these systems allow you to write polyphonic music by supplying digital information to your computer and to play it back through your stereo system. The American Micro

also gives you the option of playing it back through your Apple speaker.

These are not real-time instruments, like the analog synthesizers—the Moog, the Arp, and their ilk; you could not, unless you are frightfully fleet of hand, take one to the gig and perform on it. But what you sacrifice in immediate feedback you gain in other forms of control.

**What You Don't Like, You Can Change.** If you don't like the music you have made, edit it. Change the pitches, change the length of the notes, redistribute parts, whatever. Because you're operating a synthesizer and not conducting a band, you can specify a great many additional physical parameters of the sounds you write.

Because your synthesizer is digital, when you happen upon a quality of sound that you like and that you want to use again in another context, all you need do is take note of various numerical parametric settings; no need to eyeball or pencil-mark a dial as with the analog contraptions. And no need to worry about your instrument drifting out of tune. The reproducibility of music made via your Apple is comparable to the precision of a digital clock.

A few days ago, as I was fooling with one of these synthesizers, something shook loose in my memory. I recalled the evening in my childhood when I took a couple of dance arrangements to be played by a high school band. I had been working at them for some time but hadn't had the opportunity to hear what I had wrought.

As it happened, several of the parts were incorrectly transposed, and there were other problems as well, and the outcome of this all was embarrassing enough that I didn't want to experience anything like it ever again.

Working with the computer detached that painful memory, because, had I had the computer and a music system, the experience would have been totally different. What a dynamite opportunity it would have been to have had something like this as a kid.

**I Want To Be There When the Band Starts Playin'.** Not only for a closet composer like me, but for anyone interested in composing on any level, one of these systems could be a really valuable tool. Composers have always had to deal with the problem of finding people to play their music.

The problem is at least as severe now as ever, what with the going rate for musical talent; you could probably pay for any one of these systems with what it would cost you to hire nine musicians at scale for three hours.

With a synthesizer, a composer or arranger has the opportunity to try out and refine his work—and even make a crude demo of it—before going all out to rent live players or a studio.

No one is pretending, of course, that these synthesizers will exactly duplicate the sounds of live musicians; they will not even very closely approximate them. But then working things out at the piano or in one's imagination is also an abstraction of the finished, performed product.

**Just a Second—It's the "Minute Waltz."** Besides having these virtues, the synthesizer can be a compositional medium in its own right. Not only can a composer use one to create qualities of sound that are distinct and unique to the synthesizer, but he can also write music that almost no live musician could execute. Want to hear the "Minute Waltz" really played in a minute? No problem. Just crank up the tempo.

I amused myself mightily one afternoon with the American Micro system by writing some of the Bach Goldberg Variations at tempos as fast as Glenn Gould's, "playing" the trills just as evenly and accurately as he. Had it made musical sense to do so, which it did not, I could have outgoulded Mr. Gould with a flick of the forefinger, and in some other musical context, I might have wanted to do that.

The important value here, of course, is not the vicarious pleasure of "playing" like some musical hero, but the fact that a composer-arranger has some possibilities at his disposal that he would probably never have with live players.

**Watch Your Music Play.** A few more general remarks are relevant about what the synthesizers will do:

# Apple Music

All of them generate graphics on your monitor as you write or edit your music. These graphics closely approximate standard musical notation, and if you had a printer with graphics capacity handy you could dump each screen and have a written record of your work, either for reference away from the computer or, possibly, to put on a stand in front of a live player. I say possibly, because there are a few deviations from traditional practice that would take some getting used to.

Foremost among these from the standpoint of readability is the fact that all notes shorter than a quarter note have individual flags attached. In ordinary instrumental music notation, two eighth notes next to each other would usually be beamed together. It is easier by far to look at a group of quick notes and see what their values are if they are beamed than if you have to count the flags on each individual note.

Also, the American Micro system uses no bar lines, and Mountain Computer takes the annoying shortcut of making all accidentals in a piece—the sharps and flats not designated by

The screenshot shows a musical staff with notes and a control menu below it. The menu includes options for note values, accidentals, and dynamics. A '5' is positioned above the staff, indicating the octave.

o	♪	♩	♫	♮	♭	♯	♯♯	♭♭	CHNG PITCH	CHNG DUR	NOTE MODE	CHORD MODE
REST	♩	♫	♮	♭	♯	♯♯	♭♭	CHNG PITCH	CHNG DUR	DEL ←	DEL →	
←	↑	↓	→	SIG CMOS	MOD CMOS	SOUND CMOS	NEW	QUIT				

P= PART 1 M=4 O=4 M=NOTES DUR=4

Softalk photo

Sharps, flats, and note durations are selected from a main menu on the Mountain Computer MusicSystem. The menu also includes three "windows" into secondary menus, where one can modify dynamics and tempo. The 5 under the musical staff indicates that the music in this example will be played in the fifth octave of the system's range.

the key signature—either all sharps or all flats, depending on the key signature employed.

For example, if you are in D major, a key with sharps in its signature, you may input an A sharp but not a B flat; the latter will be converted by the system to an A sharp regardless of how you feel about it, and, though the pitch is the same as far as the ear is concerned, that kind of notation violates the sense of certain phrases and makes for difficult sightreading.

So much for generalities. There are some important differences in approach between these three systems that a prospective buyer would do well to consider.

**Climb Every Mountain.** Mountain Computer's system, like the other two, is of course both hardware and software. But its best attributes all have to do with hardware. Most important, it is the only system of the three that allows for control of waveform in addition to envelope.

Waveform is what gives rise to the phenomenon of tone color. What makes a clarinet sound like a clarinet and not like a bassoon is the shape of the sound wave. Mountain achieves variety of tone color by the process of additive synthesis, which means that superimposed upon the fundamental wave of a pitch are harmonics, or overtones—higher pitches whose wavelengths are some simple fractional part of the fundamental.

The particular constellation of harmonics—which ones are present and at what strength relative to the fundamental—is what makes for timbre, or tone color. Mountain's additive approach is just like nature's, albeit with fewer resources at hand.

At present, the Mountain system offers a choice of six instruments: bass, organ, brass, gong, string, and woodwind. These vary in their approximation of natural sounds, the organ and gong being rather more like their namesakes than the other four.

At any rate, with the Mountain synthesizer, you can produce distinct colors. The value of this has less to do with imitation of nature—no one is going to be fooled anyway—than with the opportunity for tonal contrast. With Mountain, you can, to some extent, be an orchestrator as well as composer.

Six instruments are not an orchestra, of course, and the range of colors available here is not all that great. The hardware, however, is capable of generating more. With an entirely different software approach, Syntauri Ltd. (see article, page 38) has used Mountain Computer's hardware to generate an apparently endless array of waveforms. The AlphaSyntauri is a real-time performance synthesizer and can play only one timbre at a time.

**Simple Wave Is Complex Critter.** The obstacles to having more, or more complex, timbres all going at the same time are imposed by the Apple itself; to generate even a fairly simple waveform a lot of information has to be processed in a very short time.

Mountain's approach to achieving waveform complexity within the limitations of the 6502, for all but one of their six instruments, is to combine two or three oscillators to generate a single tone color. The other two systems chose to bypass the issue of timbre and concentrate resources elsewhere.

The price for tonal variety in Mountain's system is paid in reduced polyphonic complexity. Unfortunately, though Mountain presents its system as a sixteen-voice synthesizer, it is in fact a sixteen-oscillator synthesizer, which is not at all the same thing, unless all sixteen voices happen to speak bass.

Furthermore, when you use any of the multi-oscillator instruments, all oscillators for a particular musical part must be assigned to the same stereo channel, and you are allowed to put only eight oscillators on a channel.

So if you want to write entirely with the more complex three-oscillator instruments, brass, string, and woodwind, and you want your music to be stereophonic, you don't have five voices at your disposal as you might think, but only four. To get five you would have to output the whole thing monaurally.

**Variety of Timbre in Mountain System.** Still, there is a selling point here to be considered: If variety of timbre is of paramount importance for your application, Mountain Computer is a system that offers it.

Aside from waveform, and the obvious factors of pitch and duration, the other physical attributes of a musical sound come under the heading of envelope. This is a grab-bag sort of term, roughly translatable as the loudness contour of a sound.

A piano note, when held, for example, reaches its highest volume very rapidly and dies away slowly. Thus, it has a different kind of envelope from, say, a note played on a clarinet, which might achieve peak volume more slowly and not die away at all until the player runs out of wind.

Obviously, there are a number of different parameters that can be specified to create a distinct envelope—the rate of attack, the peak volume, the volume at which the note is sustained if the contour includes a plateau, the rate of decay before the plateau, the rate of decay after the plateau—usually called the release—and so on.

Mountain's software approach to the control of envelope is through commands that mimic conventional musical language. Sustain volume, for example, is effected by means of instructions like *forte* and *piano*. A great variety of accents and other dynamic markings—such as different degrees of *staccato* or *tenuto*—are available on a sound modifier menu.

So a person approaching musical synthesis with knowledge

# Software for the Apple II and Apple II Plus\*

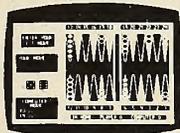


## ASTEROIDS IN SPACE™

By Bruce Wallace

An exciting space action game! Your space ship is traveling in the middle of a shower of asteroids. Blast the asteroids with lasers, but beware — big asteroids fragment into small asteroids! The Apple game paddles allow you to rotate your space ship, fire its laser gun, and give it thrust to propel it through endless space. From time to time you will encounter an alien space ship whose mission is to destroy you, so you'd better destroy it first! High resolution graphics and sound effects add to the arcade like excitement that this program generates. Runs on any Apple II with at least 32K of RAM and one disk drive.

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## FASTGAMMON™ By Bob Christiansen.

Sound, hi res, color, and musical cartoons have helped make this the most popular backgammon playing game for the Apple II. But don't let these entertaining features fool you — FASTGAMMON plays serious backgammon. Runs on any Apple II with at least 24K of RAM.

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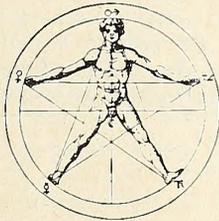
## BATTLESHIP COMMANDER™ by Erik Kirk and Matthew Jew.

A game of strategy. You and the computer each start out by positioning five ships of different sizes on a ten by ten grid. Then the shooting starts. Place your volleys skillfully — a combination of logic and luck are required to beat the computer. Cartoons show the ships sinking and announce the winner. Sound effects and flashing lights also add to the enjoyment of the game. Both Applesoft and integer BASIC versions are included. Requires at least 32K of RAM.

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## ASTROAPPLE™ by Bob Male.

Your Apple computer becomes your astrologer, generating horoscopes and forecasts based on the computed positions of the heavenly bodies. This program offers a delightful and stimulating way to entertain friends. ASTROAPPLE produces natal horoscopes (birth charts) for each person based on his or her birth data. Any two people may be compared for physical, emotional, and intellectual compatibility. The program is written in Applesoft BASIC with machine language subroutines. It requires either RAM or ROM Applesoft and at least 32K of memory.

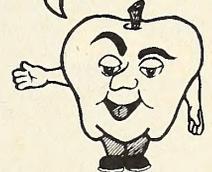


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## BABBLE™ by Don Worth.

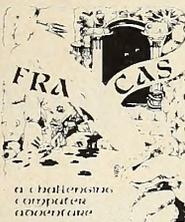
Have fun with this unique software. You write a story, entering it as a BABBLE program. As you write the story you specify certain words to be selected by the computer or entered from the keyboard at execution time. Run the program and watch BABBLE convert your story into an often hilarious collection of incongruities. The ways in which BABBLE can entertain you are limited only to your imagination. You can compose an impressive political speech or write poetry. You can plan a dinner menu. You can even form images on the screen or compose musical tunes with the help of BABBLE. The cassette version requires at least 16K of RAM and the diskette version requires at least 32K of RAM. BABBLE is written in machine language and runs on any Apple II computer.

MY SISTER'S PENCIL SHARPENER LOVES YOUR ANTEATER, AND THE CRABGRASS IS ATTACKING THE FRIENDLY MATADOR.



## BABBLE

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## FRACAS™ by Stuart Smith.

A fantastic adventure game like no other! Up to eight players can participate in FRACAS at the same time. Journey in the land of FAROPH, searching for hidden treasure while warding off all sorts of unfriendly and dangerous creatures. You and your friends can compete with each other or you can join forces and gang up on the monsters. Your location is presented graphically and sound effects enliven the battles. Save your adventure on diskette or cassette and continue it at some other time. Both integer BASIC and Applesoft versions included. Requires at least 32K of RAM.

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## BENEATH APPLE MANOR™ by Don Worth.

Descend beneath Apple Manor into an underground maze of corridors, rooms, and secret passages in quest of rich and powerful treasures. The dungeon complex consists of many floors, each lower level more dangerous than the last. If you can reach the lowest level, you may even find the ultimate object of your quest, the fabled golden apple of Apple Manor. Strategy is extremely important as you deal with a variety of monsters, each with its own characteristics. Written in integer BASIC with machine language subroutines. Requires integer BASIC and at least 16K of RAM on cassette or 32K of RAM on diskette.



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## LINKER

### LINKER by Don Worth.

Turn your Apple II or Apple II Plus into a powerful and productive software development machine with this superb linking loader/editor package. LINKER does the following and much more:

- Dynamically loads and relocates suitably prepared machine language programs anywhere in RAM.
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- Produces a map of all loaded routines, giving their location and the total length of the resulting module.
- Contains a library of subroutines including binary multiplication and division, print text strings, delay, tone generator, and random number generator.

Linker works with virtually any assembler for the Apple II. Requires 32K of RAM and one disk drive.

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# Apple Music

of music terms but with no background in the language of acoustics does not have to add anything to his vocabulary to put expressive refinement into his music.

Similarly, tempo indications can be input with traditional language, such as *andante* or *presto*. These word commands, of course, all have numerical synonyms for the benefit of the Apple, and, if you wish, you can simply tell the synthesizer to use, for example, a tempo of 70 or a volume of 150.

**Time Runs Out for Traditional Tempo.** In the case of dynamic markings, it seems to me an advantage to have at least the option of expressing yourself in such terms as *staccato* and *sforzando*, rather than to have to adjust attack or release rate.

Where tempo is concerned, input via traditional Italian nomenclature seems a little silly. Those terms evolved originally as a way of specifying character as much as precise tempo of a musical work.

*Allegro*, for example, indicated a range of tempo possibilities and was as often as not accompanied by some kind of descriptive phrase, for example, *allegro con brio* or *allegro ma non troppo*. Where tempo terms have only a single, precise, numerical value, their use is not only redundant and wasteful of software space, but violates musical sense as well.

One input feature that is unique to Mountain is the option of writing chords instead of single notes. You can write chords on all three systems, but with the other two you have to write them as separate voices, and you can't see them displayed simultaneously.

**The Lost Chord.** On Mountain, you can mix single notes with chords all on the same part, the same pass through the input/editor program. But, nota bene: If you write a three-note chord to be played by a three-oscillator instrument, you're al-

ready using up nine oscillators and, unless you plan to play your work monaurally, you're in trouble.

To make matters worse, you don't get the error message until you go to compile your PLAY file, because the system doesn't know until that point what instrument you plan to use.

There are a few additional problems with the input/editor program. There is no direct way to write triplets or other non-duple divisions of the beat. You could get around that limitation—laboriously—in some situations by making a tempo change for the triplets and returning to the original tempo thereafter, but a tempo marking must apply to all voices in a composition, so if you want something like three notes in one part against four notes in another, you're out of luck.

Finally, the whole input/editing procedure is slower on the Mountain than on the other two systems, notwithstanding the fact that the composer-editor has a choice of three input methods—light pen (supplied with system), game paddles, or keyboard commands.

When entering or changing certain parameters, the program has to go to the disc for information, and that makes for maddening, concentration-blowing delays.

In short, the Mountain Computer Synthesizer offers some unique features in terms of output sound, but has serious shortcomings on the input side.

The system comes with two large circuit boards, light pen, and software diskette, and sells for \$545.00.

**Gimme a Little KIS.** One of the two input programs on the American Micro Synthesizer is called the KIS Music Editor, standing for *Keep It Simple*, and this seems to have been the guiding philosophy behind the entire system. Writing and editing music on the American Micro is a breeze compared to Mountain, despite the fact that you have to do a lot more keyboarding to make it happen.

On both the Mountain and the ALF systems, you are able to specify default parameters for note duration, key signature, and register or octave range, but on the American Micro you



## FORTÉ Numbers Making Music

BY ROBERT KOEHLER

The burgeoning field of music software and hardware for the Apple creates an enviable problem of abundance, in that the system that satisfies your particular demands and talents must be virtually weeded out from a thicket of creativity.

For those whose requirements and wallets are modest, there is one viable choice: *Forte* by Gary Shannon, from Softape.

*Forte* is a complete language for the Apple, and many programming principles apply in its use. The nonprogramming user can learn some programming methods while practicing compositional techniques. Even as the lack of peripheral hardware creates certain limitations both aurally (despite being able to play *Forte* through your stereo speakers) and compositionally, it makes *Forte* eminently affordable: about twenty dollars on cassette, thirty on disk.

The *Forte* language is comprised of a litany of more than fifty commands, giving the user a good deal of flexibility in constructing the program/song. The error-prone will be pleased to know that a reset pushed is not a program undone: typing 800G from Monitor or CALL 2048 from Basic will instantly bring you back to the percentage sign, which is the

prompt symbol for *Forte*, with your half-finished composition intact.

Typing the standard letter identification for any note will elicit that note's sound value from the Apple's speaker. It is this function that brings the Apple with *Forte* closest to an instrument; the feature is especially helpful when you're creating an original piece.

Like the piano, *Forte* offers a seven-octave range, and, in the manner of the piano's electronic cousin, tones can be varied from one (upper-register woodwinds) to six (a basso profundo double-octave sound). The tempo function (T) can handle 255 quarter notes per minute—in case you should ever want that many. *Forte* shares functions with the Basic languages, although the terms are different, such as J, meaning jump, which, like Basic's GOTO, will spirit you throughout the program to the specific note you wish to correct or execute. Another is the deferred-execution command U, for "use subroutine," the equivalent of Basic's GOSUB, which provides the composer with the capacity to repeat refrains or phrases without duplicating programming and inputting effort.

Is *Forte* a substitute for a Fender Rhodes or a Steinway?

have to indicate those values with every note entry or you get an error message.

Thus, if you want a quarter note on the A sharp above middle C, you have to code *AS4Q* (the 4 standing for the fourth accent in the range of the system), and so on.

This appears at first to be a lot of work, but I found it not to be so, at least not after the first few minutes of working on the system. One thing that really helps is that the system beeps

input. But pitch confirmation goes a long way toward eliminating errors. You can also, at any point during the input procedure, ask the system to play your tune from the beginning, and it does this in the proper rhythm. If you happen to have hit a sour note along the way, you can simply back up to the problem and strike over it.

Fixing mistakes is not as easy as it is on the ALF, but it is a much simpler than on the Mountain.

There are no bar lines to be had on the American Micro, a limitation that affects both ease of input, because you don't have a frame of reference when you check the screen, and off-line legibility. Oddly, the system does ask you to designate a meter, but without measure lines it doesn't make any difference what you tell it.

On the other hand, you do have the option of writing triplets or quintuplets. Simply drop in a 3 or a 5 at the end of your note code; *EFF2H3*, for example, would give you a half-note triplet on the E flat below middle C.

Throughout the system, the emphasis remains on simplicity. When editing a part, you get a numbered list of your notes that allows you pinpoint scrolling just by entering a number at the keyboard. Merging parts of a composition vertically is about as easy as hitting the letter M.

I managed to write one of the canons from the *Goldberg Variations* just by entering the first part, editing in a few rests and cadential modifications, then merging my original with my update. It was a canon at the unison, fortunately, and, had the second voice been at any other interval, I would have had to write it out anew.

Advancing with American Micro. The other input/editing program on the disk is called the Advanced Music Editor. The difference is that the advanced version allows you to employ envelope specifications that you have predefined through an envelope modifier program.

Here, too, things are kept relatively straightforward and simple. The system comes equipped with a table of sixteen en-

The American Micro system provides a numbered list of the notes you select, as well as a more-or-less traditional musical display.

back your note with every entry, so you can concentrate entirely on the keyboard without having to look for visual confirmation of what you write.

Playback for Time. You do have to be careful about note duration, however, because the system only verifies pitch dur-

not in the slightest. The day can't be foreseen when the Apple—or any computer by itself—will be accepted into the school of electronic instruments, for the simple reason that instrumentality is not the Apple's strength. *Forté* reveals the tool aspect of the Apple as it relates to music: rather than replacing the keyboard, the Apple provides a facile supplement that, perhaps by accident, perhaps by its very nature, reminds the musician of a fundamental truth in the art.

Goethe's declaration that "architecture is frozen music," while lacking something in verisimilitude, unites the two in their dual natures of being both art and science. Some musicians, especially those involved in improvisation, would like to

forget this duplicity and tend to emphasize intuitive qualities over compositional, mathematical ones. But, underneath the flow and beauty of a song or a building lies an essential structure, an engineering of units.

From this perspective, music is numbers given sound, and *Forté* reminds the improvising musician of this fact. Despite the absence of graphic notes, bars and measures, the mathematical basis of music is given prominence in Gary Shannon's program in a pure manner, demanding musicians to look at the art/science from a point of view they may not be accustomed to. For the intuitive—and for most of us—the injection of logic is a healthy thing.

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# Apple Music

velopes. When you call in the envelope program you can look at each one of these graphically and hear a sample of what each sounds like.

Then, if you wish, you can draw your own envelope contours by issuing a series of sixteen amplitude specifications. The system will draw you a graph of your new envelope and play it back for you, and, if you like it, you name and save it and call it up when you use the *Advanced Music Editor*.

This approach does not give you nearly the degree of flexibility and control over envelope parameters that *ALF* does, nor does it offer the easy translatability into traditional musical dynamics that the *Mountain* user enjoys. But you can actually do quite a bit to get different qualities of sound within these limitations.

Even if you don't care to deal with envelopes at all, you can still get two very distinct kinds of sound just with the default values in the two input/editor programs. The *KIS* gives you a sustained, organlike sound, while the advanced editor defaults to something with a quick decay, rather like a harpsichord. In fact, if making home harpsichord music happens to interest you, as it did me the day I played with the *Goldberg Variations*, you can do very decently with the default envelope of the advanced editor.

**1812 Overture—With Cannon.** In addition to being able to write your own custom envelopes, you can use one channel to generate something close to white noise to use for percussion effects. The synthesizer software includes a "jukebox" of numbers already put together by American Micro, one of which is a rather impressive abridged version of Tchaikovsky's *1812 Overture*, complete with cannon, courtesy of the white noise generator.

Still another attractive feature of the American Micro is the provision for subroutines. If you have some particular chunk of music that repeats, you can simply load it into a subroutine and call it up at will.

If you want to write a longer composition with several subsections, just put the smaller units in as subroutines and then merge them all together when you're finished; the final piece plays without interruption.

From a hardware standpoint, the American Micro synthesizer is modularly designed; you can buy any number of identical circuit boards, with each one able to generate three simultaneous voices. The software will support a total of nine voices, but, beyond that, you can daisy chain additional boards together to provide "quadraphonic" sound.

The American Micro has a range from A below the bass clef to the third A above middle C; however, on the system that I sampled, notes above E above high C were pretty unusably flat—not mildly out of tune, but unrecognizable as their alleged pitch values.

I never had much occasion to use those notes, nor can I speak for anything other than the instrument I reviewed, but let your dealer demonstrate those last six or eight notes for you if you find that an important consideration.

Price for the American Micro is \$129.95 for the software and one board; additional boards are \$99.95 apiece.

**The Joy of ALFing.** With the *ALF Synthesizer* a prospective buyer has a big choice to make up front: You can either go for a single nine-voice board that sells for \$199.00, or choose a modular array of larger, higher-quality, three-voice boards at a price of \$265.00 per board. The system will support up to three of the latter, so the maximum polyphony in either case is nine voices.

The advantages of the big boards are higher quality sound production; better pitch accuracy, stated to be accurate to within two hundredths of the interval between chromatically adjacent notes; and an extra octave in range—down to the C an octave and a half below the bass clef; the upper end of the range on both boards is allegedly beyond human perception.

With either output setup, you get a software package that is versatile, musically sophisticated and an absolute joy to work with. *ALF* also supports its boards with a selection of ready-to-play music albums on disk; so you can collect and enjoy synthesizer music even if you are only a listener. Choices include popular songs, classical music, and Christmas carols.

More software for the *ALF* includes disks of utilities for special manipulation of music you've composed on the system and a package for ear training.

**Menu Offers Simple Fare, but Hearty Variety.** The *ALF*, like the *Mountain Hardware* system, takes a menu approach to input and editing. But where *Mountain* requires four separate menus and has the user going back and forth from one to the other to get dynamic commands, tempo changes, and so on, *ALF* has condensed at least the same range of possibilities into a single line below the music display.

*ALF* is able to do this in part because its method of envelope control uses direct changes in the physical parameters—attack, release, sustain, and others—rather than having the user go to a separate program to design entire envelopes.

There is a separate envelope program, where you can look at different contours graphically and hear what they sound like, but, when you're actually working with your own tunes, you can change specific aspects of the envelope while remaining in the input/edit mode.

This seems a sensible tack; it streamlines the design of the system, making for faster input, and it also gives the composer more immediate feedback about what kind of changes have what kind of results—for his own immediate musical context.

**Intelligent System Takes a Load Off Your Mind.** This is definitely a swank system. Again and again as I worked with it, I found myself being surprised by all the little amenities it provides. For example, the *ENTRY* program not only gives you aural confirmation of the notes you write, as does *American Micro*, but it also drops in bar lines automatically, so that a glance at the screen gives you immediate confirmation of where you are rhythmically.

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One of the hazards of the other systems is that you may occasionally put in a quarter note, say, when you meant to hit an eighth, and you will not discover your error until playback. With the ALF you know you blew it because when you look up everything is tied across the bar lines in a most unbecoming fashion.

Furthermore, the program is so intelligent that, if you make any rhythmical changes on the edit, the entire rest of the composition in the voice you are working with is updated in a flash to reflect the change. For example, if you change a quarter note somewhere to a half note, all the measure lines to the right of your cursor move one beat to the left.

The same applies to accidentals. Change a key signature, or drop in a new one somewhere, and sharps and flats suddenly appear or disappear appropriately throughout the remainder of the voice.

**ALF Keeps House While You Make Music.** Everything seems to be designed with the musicians in mind, allowing them to concentrate on what they do that the computer cannot



ALF's streamlined menu provides all the necessary notational choices as well as information about current measure and the number of notes that can still be put into memory. The cursor under the menu and the cursor on the staff show that the next note will be a quarter note. Placing the cursor over the row of X's at left allows the user to make envelope modifications.

do—make music—while the computer does all those kinds of chores that we love it for doing.

You can write nonduple note values on this system, but you are not limited to triplets and quintuplets. Just about any odd-ball value can be made—like nine sixteenths in the space of a half note—just by providing a numerical LENGTH command for the odd note value.

You could, for example, define a quarter note to be an arbitrary 270 units long and then get your nine sixteenths to the half by asking for notes of 60 units' duration. Wherever possible the computer notates your request with regular notation, using dots and ties; when that is not possible, it gives you X's for noteheads, but, in any case, you get the music you want.

Some other nice features: When you move your note cursor up and down the staff, with a game paddle, your Apple clicks off every line and space, allowing you to work with your nose in the manuscript or score, if you wish, with consequent advantages for concentration.

When you enter the note you get aural verification from the speaker, as with the American Micro, and, also as with that system, you can play all your input back any time you like to see how things are going.

If you have any concern about how much room you have left in memory, just glance at the number in the lower right-hand corner of your monitor. You're allowed 5,906 entries per composition, so space is seldom a problem.

For exceptionally large compositions, accessory programs allow you to append big chunks or movements. And, of course, you can write subroutines for repeated matter.

**It Looked Like a Bug.** I thought I had discovered a flaw in the system one day when I wrote a subroutine that did not fill an integral number of measures. When I merged the subroutine into the main body of the piece, the program appeared at first not to know where to drop in the next measure line.

For space-saving purposes, the main body of the music only shows the subroutine call command, not the subroutine itself, and whatever it is in the program that counts beats and inserts bar lines didn't know how many beats I had in my subroutine.

I looked up and found my score suddenly full of ties across bar lines. Then I learned that by dropping in a new meter signature at what I knew to be the beginning of a measure, the system reset its counter and all was well.

Besides being able to write subroutines, you can also transpose them, in increments of quartertones, no less. So, if that *Goldberg Variation* canon I put together on the American Micro had been at the fifth instead of the unison, it still would have been a snap to assemble on the ALF.

**Uncomplaining Accompanist.** The entire composition can also be transposed in quartertone increments, and this feature suggests some additional possibilities for your synthesizer. You could write arrangements for singers without having to worry about what key they sing in. Or jazz arrangements with you as soloist on a traditional type instrument, which you could play back and work with in any key.

You could arrange the orchestral part of a piano concerto and play the solo against it, and the quartertone transposition feature would enable you to tune the accompaniment to your piano, so that you wouldn't have to be playing "in the cracks."

**The Peril of Pleasure.** The possibilities go on and on. In fact, if there is a real hazard to these instruments—all three brands—it is that they may dominate your life for a while, to the point that you won't want to do much else.

They have had that effect on me; in fact, now that I have said this much about them, I believe I'll go make some more music.

## the prisoner

by David Mullich



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Many rock musicians like to think they represent the future, but Todd Rundgren and Roger Powell say they're just working on it.

Beneath their colorful rock 'n' roll garb, and behind the electric guitars and elaborate keyboards they're known for, live two very down-to-earth software writers.

As one of rockdom's most sought-after producers, Rundgren has worked to package and sell the talents of the Band, Patti Smith, and Hall and Oates, as well as his own group, Utopia. His next sale, though, may be an advanced graphics program written for the Apple II Plus and the Apple Graphics Input Tablet.

**Apples Onstage.** Powell, an authority on the synthesizer, has toured and recorded with British superstar David Bowie; he and Rundgren comprise half of Utopia. Powell is also the inventor of the Probe, a portable keyboard for onstage remote control of synthesizers. When he goes on tour with his own band next year, there'll probably be several Apples onstage, generating background synthesizer melodies via a software package he wrote and claims is the most flexible and practical yet designed.

What separate the two whiz kids from many state-of-the-art programmers are the facts that they both taught themselves programming and that they are consumers of their own work. What separates them from the often calculated and cut-throat rock establishment is their dedication to the different: their emphasis upon using new musical tools.

"Programming is like a form of composition," says Rundgren, a prolific songwriter. "It involves a personal style. The things I work on have a sense of esthetics about them, especially the graphics program. There's a style of user interface,

the way a person associates with the machine. It's a challenge just trying to understand the device and make it do what you want it to. It's not the same as being a Cobol programmer in a bank."

**Apple All Day Long.** For the past year, with the most successful album ever for Utopia (*Adventures in Utopia*) behind them, Rundgren and Powell have been consumed by the challenge of their Apples. "I'd just like to spend my entire waking hours at the computer," Rundgren says. As a result, he has undertaken his producing, recording, and touring efforts of late merely to provide a means for indulging his new electronic habit.

But then Rundgren, who first recorded with his former group, Nazz, at age eighteen, has always put the fruits of his talent as engineer and producer toward a greater goal. The recording studio in his Woodstock, New York, home was subsidized largely from his work with Grand Funk Railroad. He financed most of his brand-new video studio in nearby Bearsville through his producer's share of royalties from Meat Loaf's 1977 runaway platinum album, *Bat Out of Hell*.

Turning his attention to video in recent years, Rundgren interested RCA in a possible videodisk project for which he would supply the visuals to Japanese synthesist Tomita's version of *The Planets*, a symphonic work by the late British composer Gustav Holst. Rundgren eventually produced, scripted, directed, ran the cameras, and created the special effects for the fantasy.

**Time on His Hands Leads to Apple at His Fingertips.** But with barely half the project complete, RCA abandoned it as commercially unfeasible. Then the Holst estate bridled at the use of Tomita's version of the work. While his lawyers negoti-

# APPLES' ADVENTURE

BY BRUCE



ated with the estate and publisher for a license, Rundgren was left with time on his hands.

Rundgren had long been interested in computers. While in high school in suburban Philadelphia, Rundgren considered becoming a programmer. In recent years, with the means obtained, Rundgren has dabbled with several computers. He bought a Compucolor but dumped it because of static problems. Later, he bought a Pet. "It was just a joke," he recalls. "It wouldn't even load programs properly."

Rundgren's aim was to find a computer that would teach him what he needed to master an even more sophisticated machine later, one that would be capable of creating broadcast-quality graphics. Then, when the larger computer was in place, he would use it in tandem with regular television equipment to make specials and promotional materials for networks and cable television companies. On a trip to San Francisco a couple of years ago, Powell introduced Rundgren to the Apple. It's been a live-in relationship ever since.

Rundgren bought an Apple II Plus, disk drive, and Language System on the spot. A couple of weeks later he found a store in New Jersey that offered a Talous Tablet with an interface card, and he began, with Powell's help, writing the graphics program.

A few months later, Apple Computer came out with its own tablet. Rundgren went to Apple's Cupertino, California, offices to show them what he had done on the Talous Tablet. They liked the unfinished program so much that they gave him an Apple Graphics Input Tablet. So impressed was Rundgren with the new Apple tablet that he decided to reprogram his graphics work from scratch on it.

**Paintbox Rainbows from Bar Graphs to Fireworks.** Rund-

gren's project is based on a program called *Paintbox*, developed at the New York Institute of Technology. "It's not literally video animation," he says. "It's meant to be more general purpose. At NYIT, the program is written in Algol, runs on a DEC system with Evans and Sutherland frame buffers, and is probably worth five million dollars. *Paintbox* is basically different from Apple software for graphics. It's much less limited, performing hundreds of functions."

Rundgren, seated comfortably in the control room of his Utopia Video television studio, switches on his Apple, Apple Graphics Input Tablet, and color monitor. Using the software, which is written primarily in Basic, the artist need look only at the tablet (without the plastic overlay), the screen, and, occasionally, the keyboard. By pressing points on the tablet, *Paintbox* presents options for myriad shapes, eight colors, several textures, and a variety of lines and brushes. Anything drawn can be sized, rotated, and duplicated. Colors can be cycled or made transparent. The software permits holding one hundred designs of any kind. Brushes can be designed from scratch. With this setup, the user can create bar graphs, chart percentages, design a company logo, or detonate the explosion of a colorful array of fireworks.

**Big Computer Won't Sideline Apple.** "It took me a long time to figure it out," Rundgren concedes. "The math is hard." The Apple has had its drawbacks as well for Rundgren's needs. "It's fine for a home computer, but the resolution isn't up to broadcast standard. My expectations are much higher than the average user." Therefore, for this purpose, Rundgren has purchased more than thirty thousand dollars worth of hardware, including a Granel frame buffer and an LSI 1123 processor, creating a sixteen-bit full-resolution broadcast-quality

Katie K. Berner photo

# URES IN UTOPIA

ROSEN



# UTOPIA



Kornie K. Berner photo

Utopia—all of it—backstage. Bottom: Roger Powell's electronic music console.



Bob Leaf Saffalk photo

ity system containing more than a quarter-million bytes of graphics memory.

Rundgren emphasizes that his Apple won't sit idle after his new, larger computer system is installed. Among other new uses he's found for the Apple is that of communication and information exchange; he recently subscribed to the Source to implement this application.

"I'd been waiting for computers to catch up with my ideas of what they should be able to do," Rundgren says. He had started to build one, but abandoned the project, preferring something already completed. "Apple is probably one of the few off-the-shelf computers with the capabilities I need."

**Powell Did It Himself—until Apple.** In contrast, Roger Powell's first personal triumph in the land of the microchip was constructing his own computer.

"It was an Altair, real industrial grade, with a heavy power supply," Powell recalls. "You had to know a lot about computers just to put it together. You couldn't checklist options and say send me this disk or that language. I really had to dig around magazines and write to firms just to find out what I needed to set up the system. Once I figured that out, I had to buy a card and write a program to get it up and running."

"When the Apple came out, all that was done for me. I knew I had  $x$  amount of memory and  $x$  amount of peripherals available."

Powell laments never having acquired the electronics or math background he would need to design circuits. "But with the computer, a very general-purpose device, I can create a new tool by writing a program. The excitement for me is the

ability to design my own pseudomachine and have a tool that reflects my ideas about what I want to do with my synthesizers."

The two musicians say they see the trend toward standardization of computers in most phases of everyday life, and they want to be part of it early on.

**Tempering the "Way-Down Guys."** "Where we come in as artists and musicians," says the keyboardist, "is that we've taken the time to learn something about computers, bridging the gap that is created whenever any new technological development comes out. That gap develops as a result of the way-down guys with their lab coats unleashing these things on an unsuspecting world. Sometimes it's good to have an artist involved to temper their efforts."

Powell cites a lack of practical thinking by those who specialize in computer study as one of the reasons he never sought formal training. "When we might have gone to college," says the William and Mary dropout, "there was no consciousness about the need to apply what you'd learned. You needed an incredible math background and got involved in time-sharing allocations. By and large, the whole environment wasn't involved with reality."

He says the situation hasn't changed much. "I checked out Massachusetts Institute of Technology, where they kept showing me all these systems they had for notation of music on a screen. I said I wanted to hear something, and they said, 'Well, we can't really play you anything—but look at this, you can take this note out and do that with it.' They're not really in-

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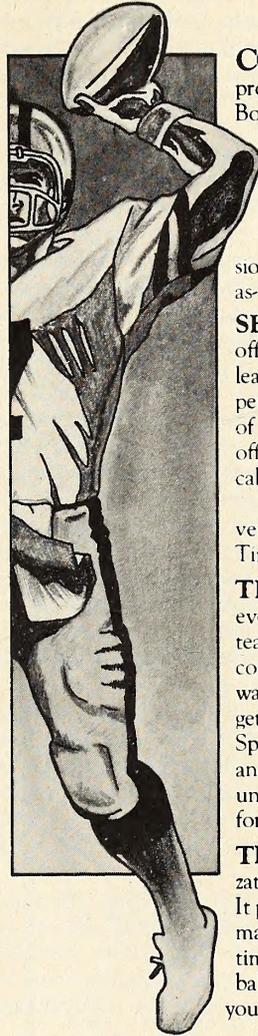
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# MARKET TALK

## R e v i e w s

**Galactic Empire.** "Early in the dawn of our age, when men were not so widely spread as now, on a small world in one of the smaller galactic systems of the nebula, there lived a people rumored to be among the direct descendants of the lost world of Earth. They were among the fiercest, most adventurous, and most backward of all people." With this rather wistful irony, the story of the *Galactic Saga* begins.

One of the trilogy of games from Broderbund Software comprising the *Galactic Saga*, *Galactic Empire* is the epitome of strategic space games—at least, until you tackle *Saga* entry number three, *Galactic Revolution*.

Finely honed hi-res graphics depict the cockpit of your spaceship; control messages appear in hi-res upper and lower case characters; computer readouts and galaxy maps can be called up on the lower console; and the upper console is the window through which you watch a colorful animated universe go by.

Appropriate sound effects accompany all graphics and, in between, there's the sound of time ticking away. If you prefer, you can play the entire game or any part of it silently; sound can be flipped on and off throughout the game.

When *Galactic Empire* begins, there really is no empire. Galactica stands alone among nineteen independent planets. The planets vary in population from less than Galactica to much, much more and in achievement from primitive to superior, with limited atomic and sophisticated (the level of Galactica) in between. Characteristics and locations of planets are generated randomly with each new game.

The object of *Galactic Empire* is to bring all other planets into an empire with Galactica. As captain of the starship, you have four crucial crew members to assist in this, plus all the spaceships you can afford to build. Taking over higher technological level planets requires more fighters for air battle, lower levels require more transports—which you must fill with troops—for ground battle.

At the outset, you know nothing about the other planets. Lieutenant Starbuck must be called upon to send scouts to gather intelligence. Since distances are in light years, careful strategy is required to determine how long a scout's mission will take; you must plan for scouts to return to the planets you will be on at the end of their missions.

Similarly, ships can be ordered built for several years in advance at the rate per year available on the planet building them—but you must know where to have them delivered, and you must collect the finished ships within five years of their completion. Otherwise, they are lost.

Ship building is arranged by ground services expert Lieutenant Bayliss. He also enlists troops to fill transports and collects taxes to pay for ships. Money is in the form of Galactic credits and can be obtained only by taxation of the populaces of member planets of the empire. Enlistees also come only from member planets; and ships can only be built on member planets with technological levels equal or superior to Galactica's. Is it becoming clear why you need an empire?

Sergeant Kirman is the navigator; he plots all travel and calculates time ranges between planets. And he loves his job.

Rounding out your crew is Doctor Henderson, an expert in cryogenics. By the era in which you operate in *Galactic Empire*, lifespans of a thousand years are not uncommon—but only because of years spent in suspended animation to accommodate light years of travel. In the game, naps of several years duration become part of the strategy. Since travel time

is speeded up, sleep must be taken after arrival at destinations. You plan when. Only during sleep will scouts return or delivery of ships be effected.

*Galactic Empire* is a fast, fascinating game requiring much strategy and logistical planning. It's easy to lose and hard to win; one mistimed attack will finish you off. Many attempts will be required before you master the game, and then the random generation of variables will make winning again almost as difficult.

Appropriately, the game can be saved and continued during several sessions. And, once you're familiar with Galactica's universe, you can intersperse *Empire* with number two of the saga, *Galactic Trader*—an even more difficult, if less vital, conundrum of a game. Third in the saga, *Galactic Revolution*, is best played with two players. This series is, enjoyably, so complex that it was possible to study only the first entry adequately for review.

Broderbund suggests fourteen as the youngest age to play *Galactic Empire* and *Galactic Trader*, sixteen as the age for *Galactic Revolution*; but we have seen a twelve-year-old girl enjoy *Empire* thoroughly.

All games come with printed pads for mapping and keeping records. You'll need them. (C) *Galactic Empire*. Broderbund Software, Eugene, OR. 48K with AppleSoft. Cassette, \$19.95; disk, \$24.95. (Other games in saga have same requirements and prices.)

**The Wizard and the Princess: Hi-Res Adventure #2.** On-Line Systems' second offering in its exclusive line of talk-to-Apple-in-English adventures illustrated with hi-res pictures is an ideal second offering in that it far surpasses the first but leaves enough yet to be perfected to keep the player thinking, "Imagine number three!"

This is not a criticism in the least. No one else has yet attempted the feat of combining these two complex game formats, and On-Line does it well. *The Wizard and the Princess: Hi-Res Adventure #2* surpasses *Hi-Res Adventure #1: Mystery House* in two technical areas: there are two hundred fifty illustrations instead of one hundred, and all are in full color—nor are the colors confined to outlines or to the standard hi-res colors. You'll enjoy rich yellows and ochres, deep browns, greens of several shades, true reds, grays, even flesh tones.

The adventure also is more complex (albeit more conventional) than number one. Beginning in the mythical town of Serenia in the center of a rattlesnake-rife desert, the adventurer must overcome thirst, snakes, and scorpions before seeming to begin making headway. Despite its solution being totally logical, this might be the hardest part of the entire adventure.

The desert itself is a maze of the first order. A hint every beginner should have and every veteran adventurer (a title that requires inclusion of the original *Adventure* in any of its several forms) already knows is: drop things. Then note your trail by direction until you run again into what you dropped; then do it all again, starting off in a different direction.

A great advantage of the illustrations, however, is that they allow room for minor graphic changes; you actually can map by carefully noting the positions of objects in each illustration, without dropping markers. But mapping, one way or the other, is necessary.

Given the mythical starting place and fairy-tale title, it follows that magic plays a role. But even the magic is logical, or at least logical through the medium of universal familiarity.

For example, if you were to find a pair of ruby slippers when you were apparently trapped somewhere, wouldn't you think of putting on the shoes and clicking the heels together? Few people, especially in the United States, are unfamiliar with Dorothy's means of returning from Oz. You may have to dig a bit in memory (yours), though. By the way, clicking shoes together won't get you anywhere in *The Wizard and the Princess*. But thinking that way will.

A wizard has stolen the princess of Serenia away to his castle over the mountains, across the sea. As the adventurer, your job is to bring her safely back to Serenia. On the way to find her, you're apt to lose all your food to a gnome, die of thirst in the desert or at sea, be taken by a lion, drown in the ocean, lose your treasure to a pirate, lose all your belongings, become marooned on a deserted island, be captured by a giant, or be eaten by crocodiles. The wizard will see that you're plagued by wild boars, unlockable doors, mazes of hallways, and poisoned food. You can't even trust an apple. And if you veterans become too frustrated and begin throwing around a "plugh" or "Y2" . . . well, you never know.

The vocabulary appears to be fairly extensive, at least within the game's needs. The player is still constrained by two-word phrases (one word will sometimes work), and, except for *inventory* (INV) and compass directions, words must be fully typed out.

The program allows saving up to fifteen different tries under different letters, so members of a family never need wipe out each other's progress to save their own games. (CT)

*Hi-Res Adventure #2: The Wizard and the Princess*. Requires any Apple, 48K, disk. \$32.95.

**Macrotronics TA650.** Especially for ham operators, Macrotronics has developed the TA650 with A6500 Disk-Based RTTY and Mighty Morse. The TA650 hooks your ham rig to your Apple. Then you sit back and watch Morse code (CW) and radio teletype (RTTY), using either the standard Bodot or the newly allowed ASCII codes, translated into English on your monitor as fast as the code comes through the radio.

Unfortunately, you may find it necessary to sit back—to rest—after working your way through the documentation for the TA650. Apparently, the manual was not written by the developers or technicians, nor, evidently, with any reference to them. Although basic information is eventually elicitable, post-writing modifications to the hardware appear not to be noted anywhere.

Although there are circuit diagrams for the three printed circuit boards, there is nothing at all on the chassis wiring. Consequently, although everything is wired from inside to out, troubleshooting is next to impossible.

And troubleshooting of a sort is necessary. Several jumpers, described in the manual as attached inside the device, are not attached at all. Asked about this, technicians at Macrotronics explained that most ham enthusiasts would want to take it apart and do it their own way anyhow. Somehow, it would seem that those who want to "do it their own way" could take it apart to achieve that end; even they would benefit from a place from which to start. Three phone calls were necessary before the placements of the jumpers to pins were clarified.

According to Ron Lodewyck (N6EE) of Macrotronics, the company is aware of the manual problems, and new manuals are being written from the ground up. Lodewyck also mentioned that certain bugs that had existed in the A6500 have been corrected and new disks are being sent to all TA650 owners.

Once the TA650 was up and running, the advantages were clear. Personalized software reads in your greeting and sign-off codes at the push of one Apple key. The TA650 locks on even to weak or fading signals and translates evenly and clearly. The sensitivity in CW is not nearly as good as in RTTY; often, the review unit was responding to incoming CW, evidenced by the blinking LED, but only an occasional letter appeared on the monitor. Possibly, this is a problem currently insoluble on any system due to the human variance in touch and tempo in sending CW.

Receiving is only one side of the story. Sending through the TA650 is merely a matter of typing your message on the Apple; according to which mode you have set, the unit sends your message in that code. You can even be forming your message while receiving, a great advantage if your typing is hesitant.

Overall, Macrotronics has a good product in the TA650, and there are more than a few ham-and-computer hobbyists using them, according to several transmissions eavesdropped upon while testing. If you're willing to tackle the documentation bugs and put in a few calls to the manufacturer, you'll end up with an enhancement to your radio setup that you're apt to enjoy thoroughly for many years.

WB6BEN & N6IC  
Macrotronics TA650, with cassettes, \$499.00. A6500 personalized software disk, \$50.

**The Prisoner.** This is not a review but merely a description of the beginning of a new computer game. A review of *The Prisoner* will appear in some future issue of *Softalk*; perhaps you will write it.

In the early sixties, there was a fairly successful television series called "Secret Agent," starring Patrick McGoochan; it was particularly popular among people who didn't ordinarily watch much television.

McGoochan followed this series by creating and starring in one called "The Prisoner," which ended—the story as well as the show—after seventeen weeks. It was extremely popular with—even considered a masterpiece by—those who liked it, but those were even fewer than enjoyed "Secret Agent." Nevertheless, this miniseries from before there were miniseries is occasionally, and fortunately, rerun—on PBS, sans commercials, cum commentary.

"The Prisoner" begins with the secret agent of "Secret Agent" resigning his post. Before the day is out, he is spirited away to a village—called only the Village—where everything is an enigma. People are known by numbers and every move is controlled and watched.

No Villager knows why he or she is there; none knows

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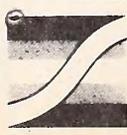
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DEALER INQUIRIES INVITED

where the Village is; and, despite their freedom within the Village, all are prisoners and none can escape. Cooperation, the friendly face, is required by the unseen captors and their agents. Nothing is what it seems. Queries about location, reasons, future are evaded with ambiguous phrases and childlike games. But the outcomes can be deadly.

The show was a riddle, a challenge of wits and traps, a mood, a tenor. It evoked fascination, astonishment, indefinable emotion.

In a piece of software, Edu-ware has captured all this. The object of *The Prisoner* is to escape from the Island, the software equivalent of the Village. The player is the prisoner, and, if you're familiar with the television show, you're apt quickly to begin feeling like you are "Number 6"—the former secret agent portrayed by McGoohan.

To escape, you must solve logical puzzles, overcome obstacles, answer riddles; often, you must figure out what to do for yourself, defying the orders on the screen. You must initiate moves. Often, you will communicate with the computer in pure unrestricted English; you may get the creeps when it seems to comprehend your most outlandish questions or statements and responds to them directly.

This erstwhile reviewer has not escaped from the Island, although she will continue trying, with great delight.

Meanwhile, *Softalk* likes its reviews to be written by a person who has thoroughly explored the subject program: someone who has completed the game. Since we are currently stumped, we offer this: we will publish a full review of *The Prisoner* written by the first person who can send us full evidence that he or she has escaped from the Island. Solutions will not be judged by *Softalk* (we don't want the answer given away before we solve it); they will be forwarded by us to Edu-ware, where they will be judged and from whom we will learn who the solver—and our reviewer—is. There is no formal deadline for this contest; it will end when the first correct solution is received.

Send your solution to The Prisoner, *Softalk*, 10432 Burbank Boulevard, North Hollywood, CA 91601. Do not send your answer on a postcard, and do not send your review. The first correct solver will be contacted by *Softalk* and requirements for the review will be worked out at that time. There won't be many requirements, but one sure one is that the review may not reveal the answer, nor give clues.

Besides having the review published, the winner will receive up to \$50 in product made by any advertiser in this November issue of *Softalk*. Include your prize choice and the name of your local store with your solution. Contest is not open to anyone connected in any way with either Edu-ware or *Softalk*.

MCT  
The Prisoner. Edu-ware, Woodland Hills, CA. 48K with Applesoft, disk drive. \$29.95.

## The World's Smartest Computer

A computer salesman:

... tried to sell a computer that "knew everything." The salesman said to one customer, "Ask it anything you like; it will answer you." The customer said, "Okay, where is my father?" The machine thought for a minute, and out came a card which said: "Your father is now fishing in Canada." The customer said: "Ha! The machine is no good! It so happens that my father has been dead for several years." The salesman replied: "No, no; you have to ask in more precise language! Here, let me ask the question for you." He stepped over to the computer and said, "This man before you; where is his mother's husband?" The computer thought for a moment, and out came a card: "His mother's husband has been dead for several years. His father is now fishing in Canada."

From the book *What Is the Name of This Book?* by Raymond Smullyan. © 1978 by Raymond M. Smullyan. Published by Prentice-Hall, Inc., Englewood Cliffs, NJ 07632.

# THE LOGICAL WAY

## BY VOYLE A. GLOVER

### The Editable, Printable, U&c Data Base

*If you've ever begun to use your favorite data base for a project only to find that you need three files for one entry; if you've ever printed out a series of files and regretted the lack of lower case characters; if you've ever wanted to change the way you've input your data base information without reentering everything . . . then consider the experience of this month's Logical Way writer, Voyle Glover. Glover adapted a text editor, Muse's SuperText, to data base use. The same kind of adaptation will not work on every word processor, but it may work on yours.*

Almost every project, business or hobby, can become bogged down with some kind of notes and odd bits of information. The entire morass cries for index cards, but the anticipated tedium of the project makes it easy to put off. Your Apple can help via data bases, but sometimes they just don't fit the whole job. One of those times, try putting all the odds and ends onto a text writer, such as Muse's *SuperText*. With some modifications, it could fill the bill, offering unlimited space in files, quick access, and easy update.

First, determine what kind of files you want. Any type of file can be built, given a format, a name, and a separate disk for storage.

For example, consider a file devoted to history: facts, dates, places, names, and brief (or lengthy) event synopses. Create a file on a separate disk for history, then outline categories you might have reason to file notes on, such as "American Indians," "Colonial America," "1917." Save the outline as a separate file so you can start another disk with the same categories when the first is filled. This is a real index file, with information filed by category and subcategory.

A file almost everyone can use is one for miscellaneous information that defies classification. This might be what the alphabet was invented for. And alphabetically by keyword or heading is how you file such data. Any item can have as much or as little text with it as it requires. You can even draw a dotted line between items, making it a real "card" file.

Subject files round out the system. A legal file would lend itself to this method, using various aspects of the law as subjects under which cases and notes can be filed for easy research.

**How Does It Work?** Come along while we search for one item and file another in a *SuperText* "data base." Load the master disk to access the program; then insert the history file. Load it, and we find ourselves at the beginning of the text.

We're looking for all occurrences of "Blackfoot Indians." Type a plus sign (+) to search forward, then hit Control F. Type in the words *Blackfoot Indian* and, in less than two seconds, the cursor stops at the first mention of these people. Hit another Control F, without search words, and the cursor appears at the next occurrence of the two words. *SuperText* allows a continued search to be made this way. A third Control F search reveals nothing.

Now, we go back to the beginning and do a search for "American History: Social," the general category under which we have information to insert. Press P, which scrolls the text forward one page, and press again until we see the right point in the file for the note to be added. Then, merely type in the heading:

pigs: towns

and the note:

pigs rampant in streets in many cities until the late 19th century; in NYC until Civil War times, and Cincinnati as late as 1866; serious problem: see book, *Good Old Days*, by Bettmann

Leave the text-writing part of the program, typing a Control S. The disk whirs, stopping to show the disk file heading, "1 History," and asks the name of the file to be saved. We merely type "1" and it recognizes the file previously loaded and saves it again in its updated form.



*Voyle Glover is a freelance writer headquartered in Gary, Indiana. Glover specializes in Westerns, history, and, since purchasing an Apple two years ago, computers. In his mid thirties, Glover is currently attending Purdue University in preparation for entering law school, a move that portends, hopefully, an additional career interest rather than a new one.*

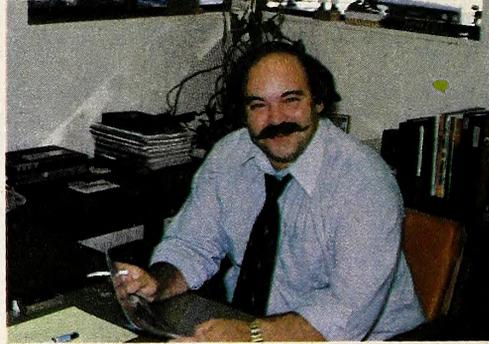
If, later, we want to use the note as part of a report, we can find it through the same process, then edit it, making complete sentences and spelling out "nineteenth" and "New York City," and finally print it out or save it separately to insert in a formal report.

**More Advantages.** There are many other little things about making such files with *SuperText* that make life easier, such as complete file merging, block moving, part saving, part deleting, as well as being able to search all on-line files and make a universal change automatically. For instance, if you discover that a fact or name is wrong in several files, *SuperText* can search for all occurrences of that word or phrase in the files you select and change those occurrences to the new words or phrase you specify.

*SuperText* is compatible with the Dan Paymar upper and lower case chip and eighty columns, and having one of these chips makes caps and lower case much easier to work with. Otherwise, don't bother with capitals except when you absolutely need them.

It's also useful to begin each file with a permanent Control Q. This tells the printer to quit. Then, when you want to print a note, insert a Control O at its beginning and the printer will begin printing there. Tapping the space bar when all you want is printed will stop the printer and return control to the cursor.

Not all word processors can be turned into super data bases, but some others can. If yours is one that can, a little experimentation should lead you to the orders equivalent to those described that apply to *SuperText*. Although yours may not have all the abilities of *SuperText*, you may find it has some unique abilities of its own. ■



Shakespeare ridiculed the importance the human species places on names when he had Romeo blurt, "A rose by any other name would smell as sweet!"

That philosophy has apparently taken hold in Santa Cruz, California, where Mountain Hardware Inc. recently changed its name to Mountain Computer Inc. Official explanation of the name change was that the new moniker gave more accurate expression to the firm's widening scope of activities.

**Yes, We Have No Computers.** But an outsider might be bemused by the facts that Mountain Computer presently resides at the beach and neither manufactures computers nor has any plans to do so in the future.

It matters not. The company that Gary Muhonen founded nearly four years ago has introduced a line of peripherals that places it foremost among hardware companies supporting Apple computers. And the advent of its line of software heralds a new era for the company.

The story of Mountain's growth is not dissimilar to that of many other firms in this new industry. Man gets idea. Man implements idea on a part-time basis. Idea is so successful that part-time attention is not sufficient to do it justice.

Muhonen did not start out to become a microcomputer hardware magnate. Af-

ter taking the bachelor of science degree in electrical engineering at the University of Illinois, he moved west to California and entered the microwave communications field.

Simultaneously, he pursued the master's degree in electrical engineering at Stanford University. He became interested in computer science while matriculating to Stanford—sufficiently so that he went home to Ben Lomond and built his own computer in his spare time.

**One Do-It-Yourself Kit Leads to Another.** Muhonen's experience with his home computer and his insight into similar efforts of other technological savants convinced him that at least some of the limitations of the new concept called the personal computer could be alleviated by the use of dedicated EPROMs.

That conviction led him to the creation of PROROM, a kit from which the home hobbyist could construct his own 8K ROM. Because Ben Lomond nestles in the Santa Cruz mountains, he called this part-time venture Mountain Hardware. The entire operation was housed in Muhonen's garage.

PROROM took off in the hobbyist marketplace and a significant demand arose for assembled and tested units. It was at this point that Muhonen took the step that was to lead to his devoting full time to the microcomputer industry—he

came out with a second product.

**People Call for Assembly.** The product was Introl and, used in conjunction with the S-100 bus, it provided the computer owner with control of electrical appliances and outlets in his home from a central location. It was the first microcomputer peripheral to provide for data feedback.

Following PROROM's modus operandi, Muhonen first introduced Introl as a kit. As with PROROM, the demand for an assembled and tested unit overtook the demand for kits.

Muhonen's garage was now strained to the maximum and, although he was still gainfully employed in the microwave industry, he now had regular employees manufacturing, testing, and shipping product.

It was at this juncture that Muhonen first met the founders of Apple, Steve Jobs and Steve Wozniak. They regaled Muhonen with visions of the bright future of the then embryonic Apple. Muhonen was quick to grasp the essentials of Apple's future and redesigned the Introl onto a controller card for the Apple.

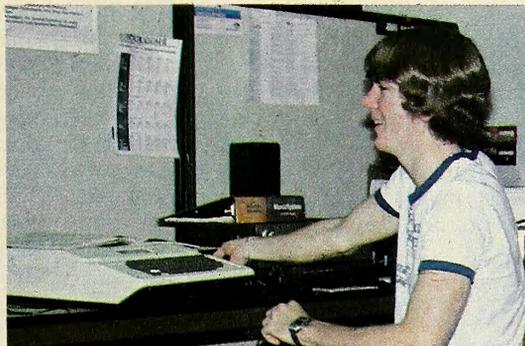
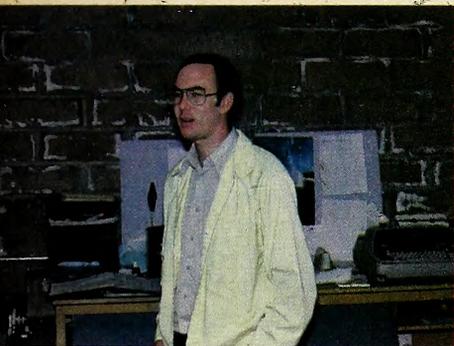
That product burst the seams of his garage, and Mountain moved to its first commercial location—a 2,500-square-foot facility in Scott's Valley.

**Alma Mater Sends Son to Market.** It also made clear to Muhonen the possi-

# Exec Mountain

## Theirs Is a Hard—and Now Soft—Life

BY ALLAN TOMMERVIK



The Mountain men, from left: Founder and president Gory Muhonen, who just didn't have a large enough garage, vice-president of marketing Avery Dee, who's widening the scope of the company's product line; director of sales Tom Scott, who's expanded the company's lines of distribution; production manager Steve Torbert, who's kept hopping by growing number of products; and Rony Moser, who's the company's resident expert on operating their MusicSystem.

bilities inherent in the peripheral manufacturing area, given a professional business orientation. So he began looking for a business and marketing professional. Help was not only near at hand but came in the form of someone with a common background—in this case another graduate of the University of Illinois.

Avery Dee had taken the bachelor's degree in mechanical engineering at UI. After some work in the family's venture capital business, he struck out on his own as a marketer of capital equipment goods, particularly specializing in industrial process control equipment.

In early 1978, he was just coming off a stint as an officer and director of a small public company based in San Jose and was looking for new opportunities. Dee's broad business experience and marketing expertise were what Mountain needed, and Mountain offered the growth potential that challenged Dee.

Dee barely had time to get on board as vice-president of marketing before the next new product—Mountain's 100,000-day clock—was introduced. It used the S-100 bus and was an instant success.

"Leadership through Innovation" Interrupts Apple. The Apple clock version was brought out in September 1978 and epitomizes Mountain's company slogan, "Leadership through Innovation." Dee wins at the slogan, not because it's not

accurate but because, in his words, "These days everyone claims to be a leader and everyone claims to be innovative. But the Apple clock truly was.

"It was the first peripheral designed with a different size Apple card and it was the first interrupt card designed for the Apple."

**Mountain Slips to Beach.** Success of the first two Apple peripherals drove Mountain Hardware completely down from the mountain and onto the beach in December of 1978, when the company relocated to its present facility in Santa Cruz.

In January 1979 Mountain introduced SuperTalker, a hardware-based input-output speech digitizer for the Apple. The product is aimed primarily at the educational market, but it made its biggest hit to date in an exhibit of U.S. technology that traveled throughout eastern European nations last year.

Mountain Hardware was chosen by the U.S. Information Agency to represent the current state of the microcomputer industry. Mountain worked with Hueristics Speech Lab to develop a speech interactive system to display.

At the Leipzig, East Germany, fair in March 1979, more than 400,000 eastern Europeans were treated to a talking Apple that conducted education courses and controlled its own environment.

By this time, Mountain's first two products—PROROM and Introl—were technologically outmoded for different reasons and were dropped from the product line, only to be replaced in short order by new Apple versions.

**High Tech Sales and 4-H Medals.** It was also during this period of high reinvestment of profits into research and development of new products that Mountain decided to enhance the corporate staff with an experienced sales exec.

Thomas Scott got the nod. Scott does not fit the midwestern mold seemingly established by Muhonen and Dee. He's a former farm boy from Arkansas who still keeps a few acres outside of Santa Cruz where he tends goats and chickens in his spare time and who still takes as much pride in his children's 4-H medals as he does in his own high-technology sales achievements.

Scott earned his sales spurs by coming up through the ranks of RCA's Raytheon division. He subsequently joined Reticon, a manufacturer of solid-state sensors based in the Santa Clara Valley, which entailed a significant daily commute from Santa Cruz. So he was quite amenable when Mountain offered him the challenge of building a sales division much closer to home.

**The Product Parade.** He assumed the post of director of sales just as a spate of

# Exec Mountain

new products began to emanate from the r&d group.

August 1979—ROMPLUS replaced PROROM to provide the Apple with the capacity for 12K additional read-only memory.

November 1979—Introl/X-10 offered more capability at a lower price than its predecessor.

December 1979—ROMWRITER complemented ROMPLUS as an EPROM programmer.

January 1980—New package offered ROMWRITER and ROMPLUS in a single firmware development system.

To accommodate this influx of product, Scott divided the country into two sales regions and recruited Bill English to head eastern sales and Bill Schlosser to manage western sales.

Since June, the product flow has again stepped up following another period of intensive r&d. June saw the introduction of the MusicSystem (see page 14). July brought the COPYROM, a 2K ROM complement to ROMPLUS.

In September, Mountain introduced the A/D + D/A board for handling analog-to-digital or digital-to-analog data conversions. While that product is aimed primarily at the scientific and industrial user, the Intelligent Optical Mark Sense Card Reader, announced in October, is aimed primarily at the educational field.

The card reader also heralds a marketing departure for Mountain in that the product uses the standard RS-232 interface, making it compatible with microcomputers other than Apple. Mountain supplies ROMs compatible with Apple-soft, TRS-80 Basic, and DEC RSTS.

Mountain is also ready to ship its Expansion Chassis for the Apple. The chassis provides eight additional slots for peripheral cards and contains its own heavy-duty power supply.

Software for the Hard Sale. But October was more notable for a departure from Mountain's previous product line. The company announced the availability of *Expert Blackjack*, a software tutorial on the popular casino game. The program is based on the book *Blackjack: Your Way to Riches*, by Richard Albert Canfield, and duplicates the information disseminated in blackjack seminars that cost as much as three thousand dollars.

Developed for the HP-85, this software package reflects Mountain's philosophy as they enter the software publishing field. Dee explains, "We will only

accept software packages so meritorious that their existence justifies the purchase of an entire system."

In this case, the HP-85 and the blackjack package come in at about the same dollar mark as the seminars, except that the buyer can use the HP-85 for other purposes as well. The Apple version of the program is expected during the first quarter of 1981.

**Silent Touch, Soft Secrets.** Dee says that Mountain has been putting out quiet feelers for software packages for the past six months and has agreed to publish a select few, but he's reluctant to itemize programs that as yet have no firm date for product announcement.

The expanding product line has put additional pressure on the sales staff. Scott recently promoted Randy Moser to the inside sales slot. Moser is technically qualified on all Mountain products, but his first love is the Music System, and he revels in the opportunity to help dealers and end users maximize their enjoyment of the system.

Scott has also closed several distributorship deals for foreign territories to expand Mountain's sales base. He now has coverage in Japan, Australia, Great Britain, West Germany, South Africa, and Venezuela, with more to come.

He's also kept pace on the home front, however. Scott places a premium on keeping Mountain's profile high at conventions, trade shows, and user group meetings.

**Mountain Prince Wears Triple Crown.** During Scott's first year with the company, Mountain's sales tripled. His goal is to duplicate that growth rate his second year.

Although Mountain's latest offerings are not exclusively Apple products, as had been the case, Dee hastens to assure that Mountain has a continuing commitment to support Apple with new product.

Dee emphasizes the innovation in Mountain's slogan. "We aren't looking to be second or third to enter a market, even if we think we can do it better. We're always looking for the product that fills the unmet need."

But the widening horizons lead Scott to verbalize a thought that permeates the organization, "The sky's the limit."

**Beach Too Small—Back to the Mountain.** Right now, it's facilities that are the limit. Mountain has outgrown both its original building in Santa Cruz, which now serves basically as staff headquarters, and a second manufacturing, testing, and shipping facility.

The company is immediately seeking a third building to make room for its thirty-five employees and has started construction on a new facility that will eventually bring the entire company back under one roof.

The new building is being constructed at Scott's Valley and, when finished, will bring the company back to the mountain from the beach. ■

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The latest breakthroughs in a data base system have been incorporated into Bill Passauer's program. The unique new feature that sets it apart from all others is its complete modifiability. You may rearrange your data, removing part of it from the original disk, and form a new data base without reentering the data again. Add, delete, replace, or rearrange and compare fields or data at any time. Do an incredible 20 level search.

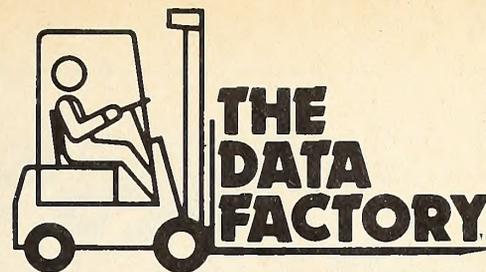
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### REQUIREMENTS

"The Data Factory" is presently being offered in APPLESOFT but will be available in other forms of basic shortly. Check with your dealer for other software varieties currently being handled. You will need 48k and Applesoft in ROM. "The Data Factory" is as powerful with one disk drive as with two. You do not lose any of its capabilities using only one disk drive. A printer is optional.

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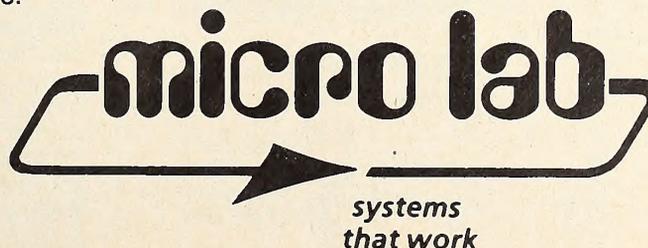
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"The Data Factory" should be at your local Apple dealer now at an introductory price of \$100.00. Stop in to see our demo disk.



# Assembly Lines

BY ROGER WAGNER

## Everyone's Guide to Machine Language, Part 2

Last month we looked at how the Apple's 6502 micro-processor scans through memory to execute a machine language program. Also, we looked at how hexadecimal notation is used to represent numbers and actual memory locations in the computer.

Remember that, as the computer scans through a block of memory, it executes various operations depending on what values it finds at each spot. It is possible to program the computer manually by entering numbers one at a time into successive memory locations. A program of this sort is called a *machine language* program because the 6502 can directly run the coded program steps. However, this type of data is very difficult for humans to read and, also, very prone to allow human error during the entry stage.

A better way of programming is to assign some kind of code word to each value and let the computer translate this word into the correct number to put there. This translation is done by an assembler, and programs entered or displayed in this manner are called *assembly language* programs.

As an example, let's look at some data within your Apple first in the machine language format and then in the assembly language format. First we must enter the Monitor. Type in:

```
CALL-151 <RETURN>
```

This should give you an asterisk (\*) as a prompt. Now type in:

```
F800.F825 <RETURN>
```

This tells the Monitor we want to examine the range of memory from \$F800 to \$F825. The general syntax of the command is:

```
<start address>.<end address>
```

the period being used to separate the two values.

Upon hitting <RETURN> you should get the following data:

```
F800- 4A 08 20 47 F8 28 A9 0F
F808- 90 02 69 E0 85 23 B1 26
F810- 45 30 25 2E 51 26 91 26
F818- 60 20 00 F8 C4 2C B0 11
F820- C8 20 0E F8 90 F6
*
```

The range I have picked is the very beginning of the Monitor ROM. The data here can be directly read by the 6502, but is very difficult for most humans to make much sense of. This is machine language.

Now type in:

```
F800L
```

This tells the Monitor to give us a disassembly of the next twenty instructions, starting at \$F800. The syntax here is:

```
<start address>L
```

To disassemble means to reverse the process we talked about earlier, taking each number value and translating it into the appropriate code word.

After hitting <RETURN> you should get:

```
F800- 4A LSR
F801- 08 PHP
F802- 20 47 F8 JSR $F847
F805- 28 PLP
F806- A9 0F LDA #$0F
F808- 90 02 BCC $F80C
F80A- 69 E0 ADC #$E0
F80C- 85 2E STA $2E
F80E- B1 26 LDA ($26),Y
F810- 45 30 EOR $30
F812- 25 2E AND $2E
```

```
F814- 51 26 EOR ($26),Y
F816- 91 26 STA ($26),Y
F818- 60 RTS
F819- 20 00 F8 JSR $F800
F81C- C4 2C CPY $2C
F81E- B0 11 BCS $F831
F820- C8 INY
F821- 20 0E F8 JSR $F80E
F824- 90 F6 BCC $F81C
```

This is a disassembled listing. Although it probably doesn't do a lot for you right now, I think it's obvious that it is at least more distinctive.

Let's look at it a little more closely. In Basic, line numbers are used to begin each set of statements, and they're also handy when you want to do a GOTO or GOSUB to some other part of the program. In machine language, the addresses themselves take the place of the line numbers. In our example, the column of numbers on the far left are the addresses at which each operation is found. The one to three values to the right of each address are the number values found there, usually called *opcodes* with accompanying *operands*.

At \$F802, for instance, is the opcode \$20. (Remember, the dollar sign is used to show we are using base sixteen, hex.) This is the opcode for the command JSR. All mnemonics are made up of three letters. In this case JSR stands for *Jump to SubRoutine*. This is rather like a GOSUB in Basic. The next two numbers, \$47 and \$F8, comprise the operand, that is, the number that the opcode is to use in its operation. To the right we see that these numbers give \$F847 as the object of the JSR.<sup>1</sup>

Continuing with our analogy, what would be a GOSUB 1000 in Basic appears as a JSR \$F847 in assembly language. This means do a jump to the subroutine at \$F847, and return when done. You've just learned your first word of assembly language: JSR! Looking through the listing we have, you can see a number of these. The first one goes to some routine outside the listing. What about the other two? You should be able to see that they reference routines within the listing. The second enters at \$F800, the third at \$F80E.

In Basic, a GOSUB eventually ends with a RETURN. The JSR has an analogous counterpart. Looking at the entry point at \$F80E and what follows, can you find anything that looks like it might be the equivalent of a RETURN? Take the time to find it if you can before reading on.

If you picked the RTS, you're right. RTS stands for *ReTurn* from Subroutine. As with a RETURN, when the program reaches this, it returns to where it originally came from. Encountering the RTS at \$F818, program execution would resume at \$F824, if entry was from the JSR \$F80E at \$F821.

You might notice that almost all machine code blocks that you may have used along with Basic programs, such as tone routines, usually end with a \$60 as the last byte. This is the opcode for RTS. In almost any assembly language program you write, you must end with an RTS. This is because, to the computer as a whole, your program is a temporary subroutine of its overall operation.

When your program ends, the RTS lets the Apple return to its original operations of scanning the keyboard and such. When you do a CALL 768, for example, from Basic, you are essentially doing a JSR to that machine routine. The 768 is the

1. You may have noticed that in the operands for all these addresses, the two bytes that make up the address are reversed. \$F847 is stored as "47 F8." This is always the way addresses are stored.

decimal value for the address of the start of the routine (768=\$300). At the end of that routine, the RTS returns you to your Basic program to let it continue with the next statement.

**Assemblers.** For writing very simple machine language programs, Integer Basic Apples have a built-in Mini-Assembler. If all you have is Applesoft, this is not available. In either case, you'll want to get a more complete assembler to do any real program writing.

Starting with the next installment, I'll assume you have one of the many available, and have learned at least enough about operating it to enter a program. For now, we'll use the Mini-Assembler to try a short program.

Since the only two commands we have at this point are JSR and RTS, it will be a very simple routine. In the Monitor at \$FBDD is a routine that beeps the speaker. Our routine will do a JSR to that subroutine, then return to BASIC via an RTS at the end.

To enter the program using the Mini-Assembler, follow these steps:

From Integer, enter the Monitor with a CALL -151. Then type in:

```
F666G <RETURN>.
```

The "F666" is the address where the Mini-Assembler program starts. "G" tells the Monitor to execute the program there. The general syntax is:

```
<start address>G
```

The prompt should change to an exclamation mark (!). To use the Mini-Assembler, you must follow a basic pattern of input. See page 49 in the newest Apple II Reference Manual for a thorough description of this. For now, though, enter:

```
!300: JSR FBDD <RETURN>
```

The Apple will immediately rewrite this as:

```
0300- 20 DD FB JSR $FBDD
```

The input syntax is to enter the address at which to start the program followed by a colon and a space, then the mnemonic, another space, and then the operand, in this case the address for the JSR to jump to.

Next type in:

```
! RTS <RETURN>
```

which will be rewritten as:

```
0303- 60 RTS
```

Be sure to enter one space before the RTS. What the assembler has done is to take our mnemonic input and translate it into the numeric opcodes and operands of actual machine language.

Now type in:

```
!$FF59G
```

This will exit the Mini-Assembler, giving you back the asterisk prompt (\*) of the Monitor. You can now LIST your program by typing in:

```
300L
```

The first two lines of your listing should be:

```
0300- 20 DD FB JSR $FBDD
```

```
0303- 60 RTS
```

What follows after \$303 is more or less random and does not affect the code we have typed in. When run, this program will jump to the beep routine at \$FBDD. At the end of that routine is an RTS that will return us to our program at \$303. The RTS there will then do a final return from the program back to either the Monitor or Basic depending on where we call it from.

From the Monitor type in:

```
300G
```

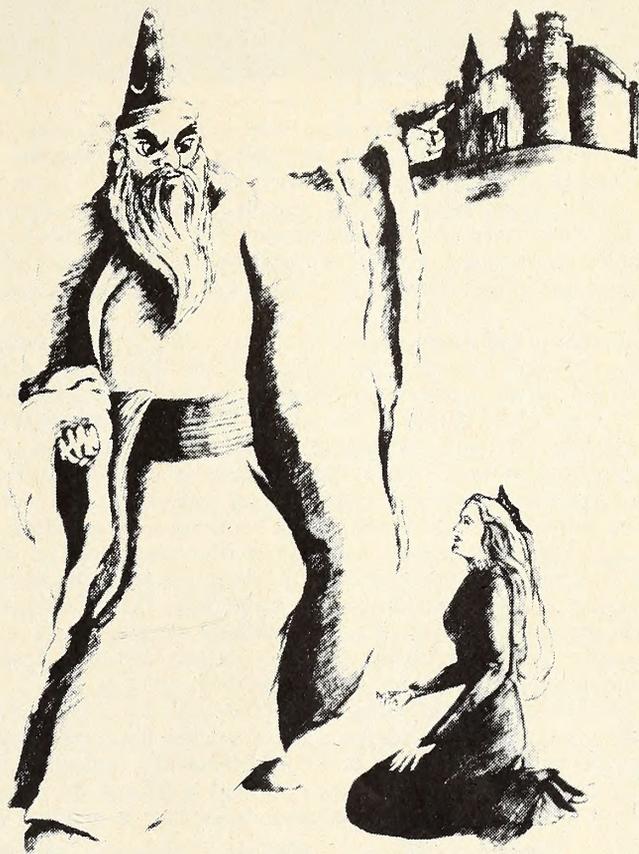
The speaker should beep and you will get the asterisk prompt back. Now go back into Basic with a Control B. Type in:

```
CALL 768
```

The speaker should again beep and then give you the Basic prompt back. This should work from Integer or Applesoft.

As long as the programs are not very involved, the Mini-Assembler is handy for writing quick routines. Look through the table of routines in the Monitor listed on pages 61 through 64 of the Apple II Reference Manual and try to write your own JSR's to these. You might even try doing several in a row for fun.

Until next month then when you, your assembler, and I meet here again, happy computing! ■



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# MARKET TALK

## News

from page 13

user to dial ABBS, CBBS, and Forum 80 with unusual ease. Has multipage menu and single-key select. Options are manual dial, word length and parity, duplex toggle, case toggle, transparent mode toggle, hang up, and return to terminal mode. *Programmer's Documentation Pack* allows user to customize *Autodialer*. Requires Applesoft and *Micromodem*. *Pascal Reference Card*, \$2; *Autodialer II*, \$15; *Documentation Pack*, \$5.

□ **Hardhat Software** (San Francisco, CA) has revised its *Whatsit?* data base for the Apple II Plus. *Whatsit?* is a self-indexing, cross-referencing file system that's been available for the standard Apple II since 1978. *Whatsit?* answers direct questions phrased in pidgin (structured) English. The program answers in kind. No structuring of field sizes are used; rather, format is based on an outline type structure using subjects as first heads, "tags" as subheads, and data. By giving subject name first, new information can be put into that file anytime. *Whatsit?* responds in two to ten seconds; storage capacity is 2,000 entries on five-inch disk, 25,000 entries on eight-inch disk. Soundex Request feature permits retrieval by phonetic matching. Apple II Plus version requires Integer Basic capacity, available on disk separately. \$150.

□ **The Telephone Software Connection** (213-329-3715) enables Apple owners with modems and American Express, Master Charge, or Visa cards to order and instantly (actually, at a rate of 1,800 bytes per minute) receive software by modem twenty-four hours a day. Software selection is original and

limited but growing, and several utility programs relevant to the service or to modems are free. Some games acquired this way can be played with friends via the phone. An account with the Connection is free; software prices vary but are comparable to regular retail-store software prices. This is, essentially, a retail store by modem.

□ **Computer Station** (Granite City, IL) offers a high-speed binary video digitizer for the Apple II by David Hudson. Called the *Dithertizer II*, the peripheral board uses a video camera with external sync to load the hi-res page of the Apple with any image the camera can capture. The frame-grabber, DMA-type digitizer requires only one frame of 1/60th second to capture a binary image (140 nanoseconds per pixel). Software enables building dithered images from multiple binary images and capturing image intensity contours using image subtraction (two frames required). Dithering produces pseudogray scale via half tones. The number of frames required to produce a dithered image is dependent on the dither matrix size. Software allows user to select and change matrix size and view effects on monitor. User may also adjust contrast and density of image. Requires video camera with external sync. *Dithertizer II*, \$300; B/W Sanyo video camera, \$410; package of dithertizer and camera, \$650.

□ **Inmac** (Santa Clara, CA) offers *Turn 'n Key*, a swivel device that acts like a lazy susan for the Apple, enabling two or more operators to use the computer without upsetting the work environment. *Turn 'n Key* can be set at a variety of angles for maneuverability and maximum speed and accuracy. The ball-bearing assembly on neoprene cushion to minimize noise is 1 1/16 inches thick, keeping keyboard height at proper keying level. Comes in two sizes. Discounts are available in quantities of three or more. 16-inch square, \$55; 20-inch square, \$62.

□ **WIDL Video** (Chicago, IL) produces three *directories* for the microcomputer industry. Two concentrate on software, divided between business and games; the other is the *Resource Directory*, which lists retailers, software, and hardware companies. Directories are \$4.95 each. □

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# TRADE TALK



□ **Thomas J. Lawrence** has been appointed general manager of **Apple Computer Inc.**'s European operation. Lawrence will be responsible for the marketing, sales, and service of Apple products in Europe.

"The establishment of a director of operations headquartered in Europe illustrates Apple's commitment to its major investment in the individual European national markets," Lawrence suggests.

Lawrence previously spent eight years with Intel Corporation as general manager and vice-president of its European operation. Prior to that, he was the European marketing manager for Tektronix.

Apple's European sales network consists of twelve distributors and more than seven hundred dealers, served by the new 43,000-square-foot manufacturing facility in Cork, Ireland, and the recently established distribution and support center in Zeist, Netherlands.

□ Major reshuffling in the executive suite at **Muse** (Baltimore, MD) has been announced by **Ed Zaron**, president of the company. Shifts keynote a more aggressive marketing posture and the company's excitement with their soon-to-be-released new edugame, *Robot Wars*.

Newly recruited into the company are **James R. Black**, vice-president of corporate operations; **James F. Salmons**, director of sales and marketing; **Silas Warner**, manager of research and development; **Shannon Edwards**, dealer sales representative; and **William Thompson**, manager of Muse's retail outlet.

Black joins Muse from Commercial Credit Corporation; Salmons and Warner were formerly with Control Data Corporation. Salmons was involved with courseware development before shifting to marketing at CDC. Warner was involved with courseware development at CDC and at the University of Illinois before that.

Black and Salmons join Zaron and **Margaret Black**, director of accounting systems, on the board of directors of Muse.

□ **FSI**, manufacturer of the FD-08 diskette drive-head cleaning kit and distributor for Verbatim media, has moved its northern California office from Palo Alto to 2680 Bayshore Frontage Road, Suite 1030, Mountain View, California 94043. New phone is 415-962-9275.

□ **Edu-ware**, one of the holdouts for user-backupable disks, has found it necessary to switch to protected software "with great reluctance," according to **Sherwin Steffin**, partner in Edu-ware. "One of our largest distributors to schools said he couldn't afford to carry our software without protection; schools openly admitted they were buying one disk and copying it in the quantity they needed. With protected brands, they buy the full quantity."

Ironically, Steffin also announced September to be Edu-ware's best month ever in sales: 35 percent higher than any month before. He credits the company's new line of educational math programs and a new advertising campaign as the reasons for the sudden growth.

□ The British government has awarded a grant of \$1.2 million over a three-year period to **Inmac**, producer of computer supplies, cables, and accessories. The company will use the grant to finance partially the startup of its first subsidiary office and inventory center outside the United States.

"Inmac's expansion into the European arena will be a mutually beneficial move," according to Inmac president **Ken El-dred**. "We are opening in an underemployed area of England. Under the terms of the grant, we have agreed to hire at least

one hundred people locally. This will not only help revitalize the employment situation, but it will also provide a launching pad for Inmac's future European operations."

The new subsidiary will be headed by **James F. Willenbord**, vice-president of international operations and one of the company's founders.

□ **Ritam** (Fairfield, IA), publishers of *Monty Plays Monopoly* (see Marketalk Reviews, *Softalk*, September 1980), have accepted an offer from **Personal Software** (Sunnyvale, CA) to distribute the entire *Monty* line. According to Ritam vice-president **Jonathan Isbit**, several major software distributors vied with Personal for the distribution rights to the unique Ritam products.

Personal appears to have no plans for additional distribution of the Ritam products for the Apple before January. At that time you can expect to see *Monty Plays Scrabble* added to the product line.

□ **Jeffrey D. McKeever**, president of **MicroAge Computer Stores**, has announced the third MicroAge franchise store. Located in Rochester, New York, the outlet opened in late September. Both owners, **Eric Kullberg** and **Frank Hacknauer**, were formerly with Xerox Corp. They underwent more than one hundred hours of intensive training in systems operation, store management, and service techniques at the MicroAge Learning Center in Tempe, Arizona, in preparation for their new enterprise. ■



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# A Direct Line to Apple Music:

## The Ivory Keyboard

BY CRAIG STINSON

The next time you're at a rock concert, if you should notice among the keyboard paraphernalia onstage a television set and that little flattop typewriterlike thing that we all know and love, don't immediately conclude that the guy up there is sneaking a look at Johnny Carson or playing Pong. He may be making music with his Apple computer and a keyboard-software package produced by Syntauri, Ltd.

Futuristically called the AlphaSyntauri, the instrument is a digital, programmable, polyphonic, real-time synthesizer. Inventor-programmer Charlie Kellner and entrepreneur Ellen Lapham—together the brains and energy behind Syntauri, Ltd.—hope that their creation will soon be making great waves, in more ways than one.

**Digital Waves.** Specifically, they would like to make some inroads into the analog synthesizer market, and it would appear that their prospects are good. There are some real advantages to doing things digitally, among them in this case simplicity, dependability, and reproducibility. Users of traditional analog synthesizers have a plethora of dials and knobs or bars to contend with. Getting from one configuration to another can be clumsy and time-consuming; getting back exactly to the first may be nearly impossible.

With the Syntauri everything is reduced to a handful of numbers, and, as if that were not simplicity enough, any pleasing pattern of wave and envelope can be named and saved on disk, and later recalled with absolute confidence. Besides all that, the digital keyboard stays forever in tune, because pitch frequencies are controlled by the clock in the Apple. No more contention with "heat, gravity, humidity and the God Murphy," as the *Syntauri User's Guide* puts it.

Of course, what ultimately matters most to keyboard players is what kinds of sounds they can get, and Syntauri has provided well, thanks to Kellner's ingenious use of circuitry made by Mountain Computer for its own MusicSystem (see "Exec Mountain," page 30).

**Simply Swinging.** When you sit down at the Syntauri, what you see instead of an array of dials and switches is a color display of the music you make. Every note you play is shown on your monitor in a bar graph format, where the *x*-axis represents pitch and the *y*-axis loudness. There are even black and white markings along the *x*-axis that duplicate the black and white keys on the piano, so you can see at a glance exactly what note is rising or falling on the monitor. And each of the twelve pitches in the chromatic scale gets its own distinct color on the display.

Making music on the Syntauri can be as simple or as com-

plex as you wish it to be. Even if you know nothing about the physical nature of sound, and even if you think an envelope is something to stuff money in, you can approach this synthesizer without fear. Just stroke your Apple once or twice and call in one of Kellner's twenty-odd preset instrument definitions. There are some obvious ones like piano, trumpet, or bells. And there are others that mimic less common natural instruments, like celeste and clavichord. For a banjolike, ragtime kind of sound, call for "Joplin." For something completely different, select "Tin."

Even if you're rather unsophisticated when it comes to acoustics, you're not likely to remain that way. The computer, as most of us have discovered, is a most patient teacher, and there is so much you can do with this computer-based instrument that you will probably learn much more about sound than you ever expected to know.

**AlphaSyntauri Mapped.** Here is the overall design of the AlphaSyntauri. A keyboard made by Pratt-Read provides input to your 48K Apple computer. The Syntauri software processes it and the two Mountain Computer circuit boards provide an output signal that goes through your own amplifier and speaker system. Since the Mountain circuitry includes sixteen oscillators and Syntauri uses two per instrument definition, the synthesizer can play up to eight notes at one time.

Each instrument definition comprises two waveforms: a primary wave and a percussion wave. When a note is played, the percussion wave actually sounds slightly ahead of the primary wave, and, because of that, it can be used to mimic certain kinds of percussion noises associated with conventional musical instruments. If you push a key down very slowly you can discover the point at which the percussion wave enters.

Besides this temporal offset, there is a pitch offset between the two waves; they are separated by a half cycle per second. This creates what you might call a *fat sound*, a more pleasing tone quality than you would get if both waves were sounded at exactly the same frequency.

Two separate waves of identical frequency, according to Kellner, would have an uncertain—and uncontrollable—phase relationship with each other. Some of the time, when you played a given note, the two would be reinforcing each other; at other times, they would be canceling each other out, and all levels of interaction between these extremes would also occur, with similar unpredictability.

**Homemade Waves.** One of the really fancy features about the system is the way waveforms are designed by the user. You call in a WAVE program, where first you are shown the

four basic tools at your disposal: a sine wave, a pure fundamental tone; a square wave, a note consisting of a fundamental pitch and odd-numbered harmonics; a triangle wave, like a square, but with even-numbered harmonics; and a sawtooth wave, consisting of a fundamental with a variety of even-numbered and odd-numbered harmonics. The program plays a note with each type of wave and draws it on the screen for you. Then you go to work to roll your own waveform.

To take a fairly simple example, here's what you might do: You could tell the computer that you want to start out with a sine wave as your fundamental. Then you could ask for another sine wave on the second harmonic at an amplitude, say, 30 percent of your fundamental. And, then, perhaps a triangle wave on the fifth harmonic, amplitude 10 percent, and a sawtooth at the ninth harmonic, amplitude 40 percent, and so on.

With each command the program summates what you've ordered so far, draws the composite wave on the screen, and plays a note back at you. You actually get to see a picture of your complex waveform as a transverse wave.

**Math Makes Music.** You can even have the program subtract harmonic elements from a wave. Suppose, for example, you have asked for a sawtooth wave, and you want to get rid of or reduce certain overtones; just specify a sine wave at the offending harmonic and give it a negative amplitude. The computer does subtraction as easily as addition. Interestingly enough, if you write in a bunch of overtones and then subtract each one of them exactly, instead of nothing at all you may get some rounding errors that will lead to some rather off-the-wall kinds of effects.

Should you desire to see what makes up one of Syntauri's preset waveforms, call up the ANALYZER program, ask for the name of the wave, and the program will draw it for you and tabulate its components up to the twentieth harmonic.

The WAVE and ANALYZER features make the AlphaSyntauri not only an instrument but also a valuable educational



Ellen Lapham, Syntauri's marketeer.

tool, and indeed a prototype model is already installed at a major southeastern university.

Let us say, then, you have now created a couple of original waveforms, using the WAVE program. You are well on your way to compiling a complete instrument definition on the Syntauri, and the next thing you want to do is define what is called the *envelope* of the two waveform elements.

Whereas waveform refers to the pattern of amplitudes within a single cycle of a sound, of which there may be many hundreds per second, envelope designates the volume contour of the sound over a relatively long period of time, on the order of seconds.

**Envelope Carries Shape of Note.** Many kinds of natural instruments, for example, makes sounds that reach some peak volume very quickly, die off a bit, remain at some constant volume for a while, then taper off to nothing. Such a contour is called an ADSR curve, standing for attack, decay, sustain, and release. If you record that kind of sound and play it back in reverse, you will likely get a whooshing kind of noise because the envelope has been reversed. You would now have a slow attack and a fast decay.

The envelope of the primary wave on the Syntauri is controlled by six parameters. Attack rate governs how quickly the sound reaches some initial peak volume; attack volume speci-

fies the level of that initial peak. Decay rate controls the initial rate of decline; sustain volume tells the computer at what level (if any) you want a volume plateau. Release rate is the rate of fadeout after the player lets go of the key; and release volume specifies the final volume level of the sound.

Normally, this last value would be zero, but you could ask for a nonzero release volume, walk away, and leave the synthesizer playing indefinitely until you changed the parameters again or shut it off. Similarly, whether or not you ask for a nonzero sustain volume will determine whether the keyboard behaves like a piano, where the sound will eventually disappear even if you keep the key depressed, or like an organ.

Having now defined two waveforms and set envelope parameters for one of them, the last major step in creating an instrument definition is to specify the envelope parameters for the percussion wave. These are simpler, consisting of a percussion rate, equivalent to the attack rate on the primary wave; a percussion volume; a fall rate, equivalent to the release rate on the primary wave; and a fall volume.

**Plucking, Tweaking, and Boom.** The percussion wave can be used as a sort of enrichment or coloring of the primary wave. For example, one of the presets that comes with the software package is called clavichord, and it achieves the plucked sound quality of that instrument partly by means of a very short-acting percussion wave that consists entirely of high harmonics, giving a quick metallic kind of noise. Since the percussion wave is sounded slightly ahead of the primary wave, what you hear is rather realistic; it sounds like a string being tweaked with a plectrum.

One of the design features that makes this synthesizer attractive for typical performance situations is the fact that any of these parameters can be altered rather simply with a few keystrokes on the Apple.

Most of the spots on the envelope menu are arrived at with a single letter, and setting the level requires at most three numbers. So a reasonably dextrous keyboard player can keep that typewriter thing next to his television set and keyboard

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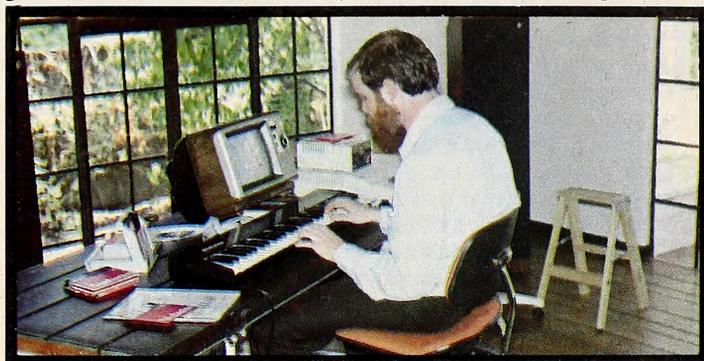
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and just change settings on the fly. That's a lot easier than fiddling with knobs.

Furthermore, since entire constellations of waveform definition and envelope settings are loaded into memory as instruments, major changes in the sound produced by the synthesizer can be accomplished by hitting a single number.

Now that you've defined an instrument and are ready to play it, still more controls await your command. Two pedals bring your feet into the act. One is like the sustain pedal on a piano; it makes the sound last longer.

What it does exactly is set the release rate temporarily to zero. Since release is the parameter that takes effect after you let go of the note, putting down the sustain pedal frees your fingers to hit other notes, until you reach a limit of eight.



Author Craig Stinson at the AlphaSyntauri.

**Hold That Note.** If you've entered a sustain volume of zero, the notes prolonged by the pedal will eventually die out anyway, just as they would on a piano. Otherwise they will sound at whatever sustain volume you have specified until you get off the pedal.

The other pedal provides what synthesizer language calls portamento—it is what traditional terminology calls a glissando. When you have the portamento pedal down, the computer remembers the last note you hit and slides from there into the

next note you hit, even if that be from one end of the keyboard to the other. You can get some pretty wacky effects once you learn how to use this thing right, probably the least of which is making your synthesizer sound like a steel guitar.

Another thing you can do—by changing a menu setting—is transpose your entire keyboard in quartertone degrees. In fact, by creating a waveform that consists entirely of high overtones and transposing your keyboard, you could serenade your dog without disturbing your spouse.

Obviously, there's a staggering amount of variety available here. And practically everything described so far, with the exception of the pedals, concerns settings that you would likely make in advance of playing the instrument.

Here are some options to be considered while playing: You may use the synthesizer simply as a performance instrument, sending the notes straight from your head to someone else's, by way of Mountain Computer and your sound system. Or you can use it as a recording device, sending your music at the same time into computer memory—and onto disk if you choose.

**Piano Duets All By Yourself.** What's nifty about this is that, when you play it back, you can play over it live at the same time; suddenly you're a four-handed keyboard player. And finally, you have the option of putting a sequence into memory, which the computer will play back over and over again as long as you like. For example, you could load the bass line and some chords for a song and improvise solos on it all night long.

If you already own a 48K Apple, the system will cost you \$1,295 for the keyboard, \$129 for the software, plus \$545 for the two Mountain Hardware boards.

There is an optional configuration that employs up to five of the large synthesizer boards from ALF in place of those from Mountain Computer. The big disadvantage to this setup is that the player has no control over waveform; only square waves are possible. On the other hand, you get three voices per board, so with five you could get some complex things happening. Going this route, your cost would be \$1,295 for the keyboard and \$265 per ALF card. ■

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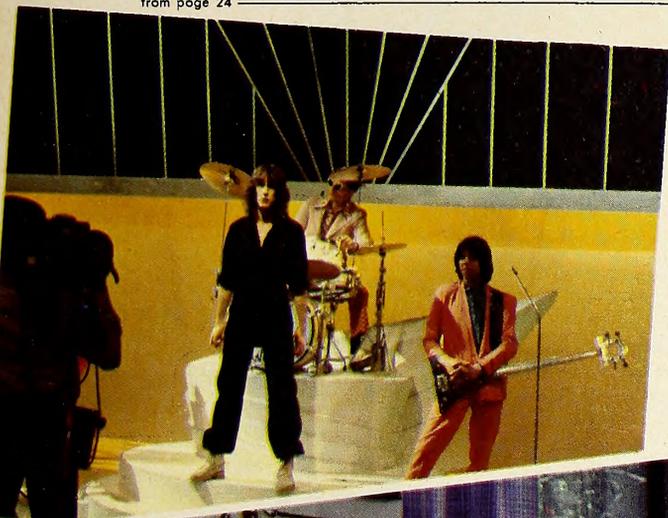
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# UTOPIA

from page 24

Clockwise from left: Rundgren front and center; Rundgren and Powell with Todd's system; Powell at his console; Utopia in concert with Powell playing the Probe, his remote control synthesizer keyboard.

Konnie K. Berner photo



Bob Leafe Softalk photo



Konnie K. Berner photo



involved in the practicality of making music. We actually use it; people understand what we're doing."

Powell's workshop is in a small guest room in his Woodstock home, a bilevel house tucked into a patch of woods off the town's main road. He's trying to sell the house so he can move out of the artist-colony mentality he says pervades the town. But he won't locate so far away that the move will affect his collaborations with Rundgren. In his present house, filled with his Apple II Plus, disk drive, Paper Tiger printer, several boxes of patch cords, synthesizers, amplifiers, and speakers, there's barely enough room to squeeze in people.

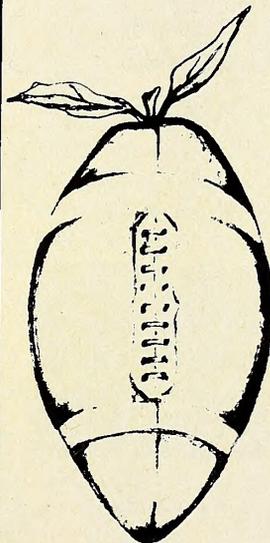
**Complications Preferred.** There are two basic approaches to using the computer in music, Powell explains. One way is to have the computer perform the functions of an analog synthesizer, counting waveforms and steps. The other way, which he favors, entails having the computer generate the sounds as well as structure the composition, which is vastly more complicated.

The first method uses a sequential voltage source (sequencer) and can program only a limited number of notes in order, perhaps sixteen, with no change in duration. "The early synthesizer music I did was background patterns and synthesis of drums," says Powell, who has acted as a consultant to two synthesizer manufacturers, Moog and Arp.

"There were few sequencers available and, since most pieces of music have patterns longer than sixteen notes, to do a whole piece of music was an incredibly tedious process. In fact, the limitations of the device dictated the style of music. Giorgio Moroder [a prominent disco producer], for instance, used eight-note patterns with a keyboard hooked up to transpose the pattern up and down."

Powell wanted to go beyond these limitations. "I wanted to

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# UTOPIA

do whole pieces and also wanted the machine to remember what it had done, so if you wanted to do something live all you had to do was pull the machine out." Powell did his preliminary software on an Imsai 8080, refining his approaches to the sequencer, trying to take the tedium out of the background patterns and add some sophistication to the controls. His work on the Imsai was later documented in a paper he delivered to an annual convention of the Audio Engineering Society.

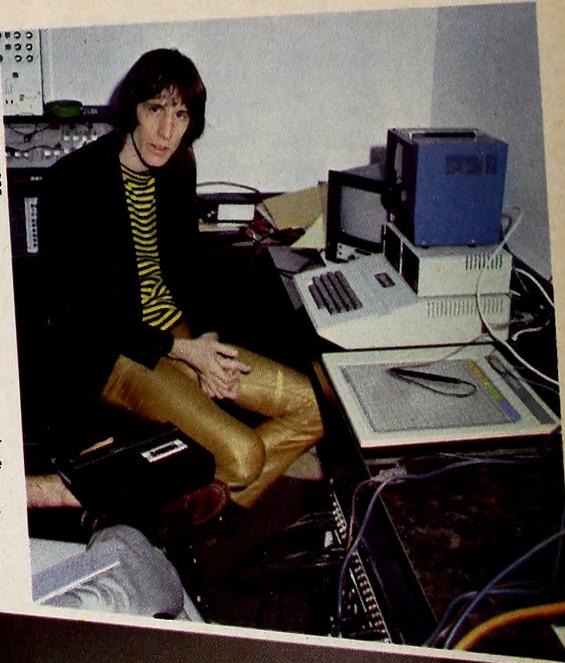
**Apple Picks Up Where 8080 Left Off.** The 8080 helped Powell learn the basics, but it proved inadequate to the final task. The Apple turned out to be perfect for Powell's needs. "I wanted to use a machine that a lot of people had access to. The more you standardize, the more people will use it," he reasons.

Powell uses the Apple II Plus with disk drive ("a cassette recorder would do") and Paper Tiger printer. To this system, he adds a California Computer Systems parallel port card for providing trigger signals to the synthesizer, an Interactive Structures eight-channel digital to analog converter, and an Audio Generator as a timing source.

Then there's the program. "Where other devices fail is that, although they allow you to create a bunch of sequences, there's no way of organizing them into a score; so essentially you have to put each sound on tape, one at a time. If you want to change it, you have to edit the tape. With my program, you can edit in the machine. It allows me to make the most of my time. I do most of my work in the studio, but, at one hundred fifty dollars an hour for studio time, I can use the Apple to compose at home, then just transport the equipment to the studio and insert the disk."

Powell has almost completed the first stage of his program, all in assembly language. The project is divided into the driver program and the program that actually reads the score and

Bob Leete Softalk photo



Right: Todd Rundgren with his Apple graphics system. Below: A recording session in Utopia's studio.



Konnie K. Berner photo

makes the music happen. For the next stage, Powell will input the musical symbols that will make the program easily understood by musicians. Meanwhile, it's in hexadecimal form only, and, because he's now busy recording a solo album to be finished before Utopia ends its hiatus, he isn't working on the musical interpreter and won't until the new record is finished.

**In Utopia, Apples Are a Way of Life.** "The idea is that if I can write the program and somebody buys it, it's going to be cheaper than things on the market that try to do the same thing." Besides, he says, when you buy an Apple, you're also getting a general-use computer. "I find it challenging to work with something so many people can use. I feel as if I've tamed the Apple, and perhaps that's enough for now. I see a certain danger in getting too involved in the labyrinthian passages of a machine. After all, I've spent so much time programming in the past year that I haven't done much recording. Suddenly I found myself faced with a decision. Am I going to be a full-time programmer or what? The answer is that I'm not; I really don't have the background or patience. It has taken four years to get to the point where I can say, 'Here's a program that's almost finished.'"

Rundgren comes to much the same conclusion. "Some people spend twelve hours a day programming for synthesizers. My livelihood is in record production. I can't afford to devote my life to programming. I would be throwing away something I already have to gamble on something that might never be lucrative."

Still, Rundgren hungers for the day when his video studio will be his prime moneymaker, and Utopia won't have to endure the rigors of frequent touring. Instead, they'll broadcast concerts from the Utopia Video Studios, where, from the beginning, Apples have been a part of everyday life. ■



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# Softalk Presents The Bestsellers

*VisiCalc* again led all software for the Apple computer in *Softalk's* monthly poll of bestsellers, but, as usual, the story is not so simple.

By far the bestselling piece of software-oriented product in the marketplace during the month of September was DOS 3.3, Apple Computer's disk operating system enhancement. In addition, Microsoft's Z-80 board would have ranked high in the top ten had its inclusion been allowed. However, because both require the purchase of hardware for the user to receive the software benefits inherent in the products, both entries were disallowed.

With DOS 3.3 and the Z-80 board not in the running, six of the top ten programs from last month maintained positions in the top ten. Other than *VisiCalc*, *Flight Simulator* from Sublogic, *Sargon II* from Hayden, *Bill Budge's Space Album* from California Pacific, *Odyssey* from Synergistic Software, and *Hi-Res Adventure #1: Mystery House* retained top ten status.

The second column of numbers from the left in the Top Thirty listing indicates which place the listed program held in last month's poll.

Others making the top ten were *Hi-Res Adventure #2: The Wizard and the Princess* from On-Line Systems in its first month of availability; *Bill Budge's 3-D Graphics System* from California Pacific, which rose from eighteenth last month; *Apple Plot* from Apple Computer, which made the largest advance in the list, coming from twenty-ninth, and *Asteroids in Space* from Quality Software, which leaped from twentieth to sixth in the latest poll.

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## The Top Thirty

1. 1. 99.44 *VisiCalc*, Personal Software
2. — 82.53 *Hi-Res Adventure #2: The Wizard and the Princess*, On-Line Systems
3. 18. 71.76 *Bill Budge's 3-D Graphics System*, California Pacific
4. 2. 70.74 *Flight Simulator*, Sublogic
5. 29. 61.00 *Apple Plot*, Apple Computer
6. 20. 55.36 *Asteroids in Space*, Quality Software
7. 4. 52.80 *Sargon II*, Hayden
8. 3. 44.08 *Bill Budge's Space Album*, California Pacific
9. 5. 30.24 *Odyssey*, Synergistic Software
10. 7. 29.73 *Hi-Res Adventure #1: Mystery House*, On-Line Systems
11. — 27.68 *Galactic Empire*, Broderbund Software
12. 21. 27.17 *Computer Bismarck*, Strategic Simulations
13. 8. 25.12 *Typing Tutor*, Microsoft
14. 19. 24.60 *Easy Writer*, Information Unlimited
15. 13. 24.09 *Rescue at Rigel*, Automated Simulations
16. 9. 23.58 *Temple of Apshei*, Automated Simulations
17. — 22.55 *Computer Quarterback*, Strategic Simulations
18. 14. 22.04 *CCA Data Management System*, Personal Software
19. 17. 21.53 *Wilderness Campaign*, Synergistic Software
20. — 21.02 *B-1 Nuclear Bomber*, Avalon Hill
21. 6. 20.50 *Adventure*, Microsoft
12. 20.50 *Head On*, California Pacific
- 20.50 *Galactic Revolution*, Broderbund Software
24. — 19.99 *Cosmos Mission*, Astar International
11. 19.99 *Morloc's Tower*, Automated Simulations
26. 25. 19.48 *Computer Ambush*, Strategic Simulations
27. 22. 18.97 *Apple Writer*, Apple Computer
28. — 17.94 *Data Factory*, Microlab
29. — 17.43 *Midway Campaign*, Avalon Hill
30. — 16.92 *Programming Aids 3.3*, Dakin5

Nine programs entered the Top Thirty for the first time. Other than *The Wizard and the Princess*, they were *Galactic Empire* from Broderbund Software, eleventh; *Computer Quarterback* from Strategic Simulations, seventeenth; *B-1 Nuclear Bomber* from Avalon Hill, twentieth; *Galactic Revolution* from Broderbund, tied for twenty-first; *Cosmos Mission* from Astar International, tied for twenty-fourth; *Data Factory* from Microlab, twenty-eighth; *Midway Campaign* from Avalon Hill, twentieth-ninth; and *Programming Aids 3.3* from Dakin5, thirtieth.

The Top Thirty again shows the diversity of interests and applications of Apple owners. Twenty of the top thirty programs are game and entertainment oriented, ranging from arcade games through war games and fantasy games to strategy games.

The ten remaining programs approximate the entertainment programs in sales volume and exceed them in sales revenues, indicating that the more serious applications can be very remunerative for the software publisher who creates a viable package.

September was not a particularly strong sales month for software and many of the programs that rose in the list or made the list for the first time achieved their status by merely holding their own while other programs were slumping.

It should be further noted that the programs of software publishers who accept mail and telephone orders fare poorly relative to the programs of those software publishers who attempt to redirect such inquiries back to the retailers.

Bill Budge remains the individual programming star in the Apple firmament, although Ken Williams of On-Line Systems and Bob Clardy of Synergistic Software are pressing him for that honor.

Budge wrote the third and eighth most popular programs of the month and had another program, *Trilogy*, just miss the Top Thirty. Last month *Softalk* erroneously ascribed *Head On* to Budge's efforts as well. That program, tied for twenty-first this month, is distributed by California Pacific, which handles most of Budge's programs, but is actually licensed from Astar International, the Japanese firm that makes *Cosmos Mission*.

Of interest about the newcomers is the fact that two companies each placed their first two programs in the Top Thirty. Broderbund placed two parts of their three-part *Galactic Saga* on the list while two of Avalon Hill's five recent war game entries also made the list.

Microlab's *Data Factory* becomes the second data base program to make the Top Thirty, joining *CCA Data Management System*. Dakin5's *Programming Aids 3.3* is the second programming utility to make the list; the first, *Apple-Doc* from Southwestern Data Systems, made the Top Thirty last month.

Apple-franchised retail stores representing approximately 15 percent of all sales of Apple and Apple-related products volunteered to participate in the poll.

Respondents were contacted early in October to ascertain their sales leaders for the month of September.

The only criterion for inclusion on the list was number of sales made—such other criteria as quality of product, profitability to the computer retailer, and personal preference of the individual respondents were not considered.

Respondents in October represented every geographical area of the continental United States as well as Alaska and Hawaii.

Results of the responses were tabulated using a formula that resulted in the index number to the left of the program name in the Top Thirty listing. The index number is an arbitrary measure of relative strength of the programs listed. Index numbers are correlative only for the month in which they are printed; readers cannot assume that an index rating of 50 in one month represents equivalent sales to an index number of 50 in another month.

Probability of statistical error is plus-or-minus 3 percent, which translates roughly into the theoretical possibility of a change of two points, plus or minus, in any index number.

# pfs: software Who needs it?



## You do.

For small amounts of information a pencil and paper filing system works great. But when you want to keep track of hundreds of pieces of information this system has limitations. Recording information is slow, locating what you want can be impossible, and the system is so time consuming it keeps you from filing information you know is valuable.

With PFS software and an APPLE\* computer you have a powerful alternative. Using the concept of designing a form on the screen, PFS lets you create a file of information on any subject you wish without programming. You can catalog your stereo record collection, 35mm slides, magazine articles, daily expenses, or your club's membership list. Using PFS at work you can make better decisions by creating files on inventory, customers, or orders and accessing them in seconds.

To use PFS you simply design a form on the screen by typing the names of the items you want to store information about. Once the form is created you tab from

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item to item and fill in the information. This can be a single piece of data or several pages of text. Up to 1000 forms can be stored on a diskette.

Looking up information is just as easy. PFS can search for a number, a single data item, or a word within a page of text. All forms that match are displayed on the screen. You can browse through each one and change, delete, expand, or print it. PFS even has a print formatter that lets you create mailing labels.

PFS software is different. It is not a specialized application package or a complex programmer oriented data base manager. It is a personal filing system that lets you communicate with the computer using meaningful everyday concepts to rapidly create files on

any subject matter you require.

PFS is available through your local dealers. If they don't carry it, have them give us a call at (415) 368-7598 or write to us at Software Publishing Corporation, P.O. Box 50575, Palo Alto, CA

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## Software Publishing Corporation

# The Perfect Fit

The Micromodem II data communications system and the Apple II\* computer. What better combination to maximize the capabilities of your personal computer!

This popular direct connect modem can transmit data between an Apple II and another Apple II, a terminal, another microcomputer, minicomputer or even a large time-sharing computer anywhere in North America. The Micromodem II has unique automatic dialing and answer capabilities which further increases the communications possibilities between the Apple II and another computer or terminal.

You can send and/or receive messages or data when you are out of your office, home or out of town. Your branch business locations can communicate with each other regarding inventory and other matters over the phone. Or you can communicate with friends across the country. And you can access information utilities like the SOURCE for various business and personal applications.

The Micromodem II consists of two parts. One part includes the printed circuit board which holds the Micromodem II, ROM firmware and the serial interface. The board plugs directly into the Apple II providing all the functions of a serial interface card plus programmable auto dialing and auto answer capabilities. The on-board ROM firmware enables the Micromodem II to operate in any of three modes to perform different tasks-terminal mode, remote console and program control mode.

The other part of the Micromodem II datacomm system is a Microcoupler which connects the Micromodem board and Apple II to a telephone line. The Microcoupler gets a dial tone, dials numbers, answers the phone and hangs up when a transmission is over. There are none of the losses or distortions associated with acoustic couplers. The Microcoupler is compatible with any North American standard telephone lines and is FCC-approved for direct connection in the U.S. It works with standard dial phone service or Touch-tone service.

The Micromodem II is completely compatible with Bell 103-type modems. Full and half-duplex operating modes are available as well as speed selectable transmission rates of 110 and 300 bps.

Why not increase your Apple II's capabilities by outfitting it with the sophisticated Micromodem II data communications system? The Micromodem II is available at retail computer stores nationwide. For the store nearest you, call or write:

 **Hayes**

**Hayes Microcomputer Products Inc.**

5835 Peachtree Corners East, Norcross, Georgia 30092 (404) 449-8791

\* Micromodem II is a trademark of Hayes Microcomputer Products, Inc.

\* Apple II is a registered trademark of Apple Computer Inc.

The Micromodem II can also be used with the Bell & Howell computer.

