❦ PLAYBOY GUIDE ❦

ELECTRONIC
ENTERTAINMENT

GAMES!
HOW TO BEAT DONKEY KONG

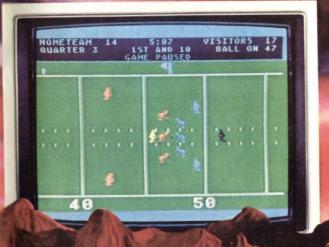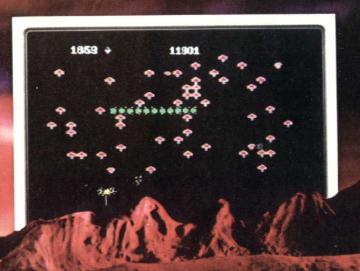### HIGHEST ARCADE SCORES KNOWN TO MAN

VIDEO!
ADD YEARS TO YOUR OLD VCR

HOME MOVIES: LET'S GO TO THE VIDEOTAPE

COMPUTERS!
FOR 100 BUCKS, YOU CAN BE BRILLIANT

STEREO!
DO YOU REALLY NEED DIGITAL?

ATARI IN THE 5200 SU

No one knows better than Atari what arcade players want. And that's just what we've given them: The new Atari 5200 SuperSystem.

Everything Atari has learned since we invented video arcade games has gone into the 5200 SuperSystem. Arcade graphics, arcade action, arcade sound. All so real, it's unreal.

The 5200 has its own special arcade-quality cartridges. Like Centipede,™ PAC-MAN,' and Galaxian.² Plus the most lifelike sports games anywhere.

Its controller is the most advanced in the world. With an incredibly precise 360° analog joystick. A

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ELECTRONIC ENTERTAINMENT

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On the cover: *Joining the latest video game craze, Playmate Cathy St. George gets carried away by Donkey Kong. Photography by Marco Glaviano. Special effects by Kenvin Lyman. Styling by Jerri Sokolec. Dress by Akira.*
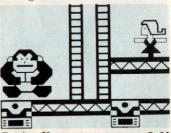
LETTERS

Memory Lane

I just read Pete Hamill's *The Last Picture Show* [Spring/Summer '82] and, I must say, his story was wonderful, very authentic and full of good humor.

It also reminded me of the good old days in Brooklyn, when I also collected four sets of dishes.

L. L. Wenger
Brooklyn, New York

The Last Picture Show by Pete Hamill brought back all the fun of watching chapters, groping in the back row and taking lunch to the movies. He didn't mention the admission price in those early days. In South Philadelphia, in one of those "dumps," admission was five cents. And the first twenty kids in line received candy bars that were almost always stale. But we loved it!

Paul Goloff
Philadelphia, Pennsylvania

Game Plan

Contrary to the opinion of an Atari spokesman [*The Video Game Hall of Fame*, Spring/Summer '82], Atari joysticks can be easily modified for left-handers.

Disassemble the controller by removing the four screws from the back of the case. Then open the case and pull up the circuit board inside, being careful not to lose the small spring on the bottom of the red "fire" button. There are six wires attached to the board: Remove the white, green, brown, and blue leads, then reattach them as follows: white lead to the terminal marked "GRN"; green lead to "BLU"; brown lead to "WHT"; and blue lead to "BRN." Reassemble the controller.

If you now orient the joystick with the red button in the upper right corner, it will function correctly for left-handers: "Up" is away from the player, "down" is toward the player, and "left" and "right" should be obvious. The "fire" button function has not changed.

Edward Floden Jr.
Hanover Park, Illinois

The Video Game Hall of Fame was interesting but incomplete. You owe it to yourself and your readers to review the Bally Astrocade. It would take a whole page to extol the game's virtues. We told an acquaintance about our new video game system. He was rather skeptical that it could be *that* much better than the others. After playing a dozen different Astrocade cartridges, he bought the game.

Kathleen A. Brevig
Painesville, Ohio
Astrocade was introduced shortly after we

locked up our last issue. For more on that and other new consoles and games, see *There's More to Life Than Pac-Man*.

I enjoyed your *Video Game Hall of Fame* and was glad to see that Atari's Pac-Man was ranked among your favorites. My personal favorite happens to be Ms. Pac-Man. I think this feminine version is better than the original, but I've only seen it in the arcade version. Is there a home cartridge?

Judy Walsh
Pittsburgh, Pennsylvania

Our test team has found Ms. Pac-Man to be a more complex game than the original Pac-Man. As

of now, Bally Midway, manufacturers of the Ms. Pac-Man arcade game, tells us there are no plans for a home version. We'll keep you posted.

What's In A Name?

In the *Flash* section [Spring/Summer '82], I found an error in the spelling of Karl Malden's real name.

It's not "Malden Sukilovich." it's Mladen Sekulovich.

On *The Streets of San Francisco*, Malden occasionally would call out to a policeman, saying, "Hey, Sekulovich, bring that report later," or some other reference to his real name.

He didn't leave home without it.

Albert Mann
Grand Prairie, Texas

Tape Tips

Your Spring/Summer '82 issue was entertaining and full of useful information on a wide range of consumer electronics products. I would just like to comment on a few apparent misconceptions in *Measuring Tapes*.

While Scotch Metafine was the first metal tape introduced, almost every other major tape maker had a product on the market in late 1979 or early 1980. The article indicated that most metal tapes were

introduced only last year.

Also, the statement that you need metal-capable equipment to avoid losing high frequencies is untrue. If you record a metal tape on a deck not equipped for it, just the opposite will happen. The high frequencies will be boosted substantially. The problem is that the low and midrange will be lost, and the recording will have a tremendous amount of distortion. (Incidentally, once a metal tape has been properly recorded, it can be played back on any deck whether or not it is metal-capable.)

Ed Havens
Technical Services Manager
TDK Electronics Corp.
Port Washington, New York

That's The Spirit

The article *The Official Playboy Road Test*, on the Rolls-Royce Silver Spirit [Spring/Summer '82], is a true classic! I have shared it with all of my friends and the consensus remains—superb!

I own a Mercedes-Benz 450 SL. For driving ease and handleability, what comes close? As for the "McStickability" test, I will never know. Edibles and spillables are not allowed!

Patricia Harper
Inglewood, California

For The Record

In your Spring/Summer '82 issue's *Advisor* you misrepresented one of our company's products.

Instant Replay's Image Translator does everything the article claims, but *does not* require a foreign-standard television set or projection system. In fact, that is the major point of interest to consumers as far as the Image Translator is concerned.

Once the VCR has been modified with the Image Translator, tapes in the PAL or SECAM format can be played back on *any* television set, monitor or projection system —with no problem whatsoever. The modification does not affect the normal use of the VCR in any way, and the VCR is set up exactly as you would a nonmodified unit.

Diane Atchley-Fischler
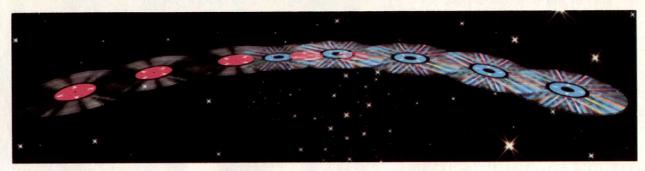Instant Replay
Coconut Grove, Miami, Florida

Foreign Intrigue

I must congratulate you on the PLAYBOY GUIDE TO ELECTRONIC ENTERTAINMENT. This is the most professional magazine of electronics ever sold in Belgium.

Eric Fersago
Sint-Niklaas, Belgium

We welcome your comments. Address your letters to Playboy Guides, 747 Third Avenue, New York, New York 10017.

FLASH

Jack Valenti declares war on Japan

Jack Valenti seems to like being in the crossfire of battles. As president of the Motion Picture Association of America, he devised the controversial rating system—G, PG, R and X—which at one point or another has gotten everyone mad at him: studios, directors, theater owners, critics. Try explaining why a movie with Julie Andrews uttering expletives gets the same rating as one with Al Pacino cruising for leather and chains, and you'll see why Valenti gets so much heat. But that's nothing compared to the current imbroglio: The Universal vs. Sony suit pending before the Supreme Court, in which Valenti is representing the entertainment industry, arguing that home video taping represents infringement of copyright to such a dangerous degree that if it is allowed to continue, without royalty compensation, it will cut in half the number of new movies and TV programs released. He stepped out of the battle for a few minutes recently to explain to us what he means. Here, as Valenti presents it, is one side of a complex controversy:

"The Universal vs. Sony case is a national threat. Virtually all the VCR machines are made in Japan and 85 percent of all the blank tapes are made over there. The only things the Japanese can't seem to clone are American films and television programs. They just can't make movies like we do. We dominate the world. Films were the most wanted U.S. export last year. But then here comes this Japanese machine that not only can destroy our business, but also can destroy it in two ways: on television, through the ability to tape the programming, and in piracy, because of its ability to reproduce films. We're losing maybe 100 to 200 billion dollars a year from piracy.

"In contrast, the six major companies that make the VCRs—Japan's Sony, Sanyo, Matsushita, Hitachi, Toshiba and JVC—made $2.8 billion in net profits in 1981, a third of which can be ascribed to VCRs. That's more than the film and television industries combined make in this country! I tell you, if the situation was reversed—if we made VCRs and then went over to Japan and tried to tape their movies and programs—I daresay their government would waste not one second in applying private property and copyright royalty fees. But in this country, the Japanese have a powerful lobby, so we're having problems.

"All we want is proper compensation. VCRs are the only delivery system not licensed; theaters, pay cable, network TV, prerecorded cassettes, local TV, even (soon) direct broadcast satellite TV all have to be licensed. I think royalty fees on VCRs should perhaps be something like $50 on the sale of machines and $1 on the sale of blank videotapes. I think that's very little, when you consider that someone spends $800–$900 on one of those machines. And the Japanese are well fortified with profits to absorb it, if they so choose.

"You have to understand, advertisers are very worried. They're not going to pay on network or syndicated or cable-originated programs for any audience that is VCR-associated. I have three letters on my desk right now, from Frito-Lay and Coca-Cola and TWA, saying that they will not pay for audiences who fast-forward through the ads or they will insist on paying at a reduced rate—because the potential for deleting their commercials is just so great. VCRs have the capacity to assassinate commercials. I know it, because I do it myself. I have

The joy of sticking

We've always worn our hearts on our sleeves. Now it's time for other passions. **Activision,** the video game company, has started special clubs for over-achievers. When you buy most Activision games, the instructions give you a score to beat. You top the score, take a picture of the screen, send it in and get a winner's patch to wear. It's as simple as that. Just ask Jonathan Rubin of Scarsdale, New York. He got a **Kaboom!** cartridge for his birthday and took the machine to its limit—999,999. Jonathan is eight years old. The kid probably just peaked early. By the way, the guy here is a model, not Jonathan Rubin. Jonathan has a bushier mustache.

ADVISOR

Is Beta better?
Are equalizers worth
the money? Here, we
answer your questions.

PAT NAGEL

While I'm really interested in purchasing a personal computer, I have the sinking feeling that my initial purchase will lead to a bottomless pit of expenses. Though I can afford about $1000 for the computer, the extras, such as disc drives, printers and displays, could easily double and triple the tab. Can you give me any pointers on how to get the most out of a computer while still keeping the price down?—P. B., Cleveland, Ohio.

Absolutely. Since this will be your first computer, and you've survived up till now without one, jumping too deep into an initial investment would probably be a waste. There are many computers capable of running very sophisticated home and game programs that can be purchased for under $400. As for peripherals: Instead of using a disc drive for storing programs, lots of first-time computer users get good results with a cassette recorder to store programs. Just about any portable cassette recorder will do, and even the models sold specifically as adjuncts to home computers are priced under $100. And many programs are available prerecorded on cassettes ready to load into your machine. For a display, dig up an old black-and-white television or make your color portable do double duty; almost all personal computers offer an RF converter that hooks the computer up to the antenna inputs on a standard TV. The only peripheral we wouldn't skimp on is a good printer. If you're going to attempt even the most basic word processing or graphics, plan to spend about $650 for a good dot matrix printer; the cheaper thermal printers demand special paper and can be a nuisance to use.

I recently purchased one of those new electronic typewriters. The salesman who sold it to me said that should I ever want to buy a personal computer, the typewriter could double as a computer printer. After searching through the typewriter's owner's manual and not finding any reference to this capability, I returned to the store to get more info from the salesman. He was no longer working there and the owner of the store didn't seem to know anything about it. Was I sold a bill of goods?—J. M., Los Angeles, California.

Chances are the salesman was really on top of the quickly evolving home computer scene, for, indeed, many brands of electronic typewriters (as opposed to electric typewriters) can function as high-quality computer printers, since they use digital logic, just as computers do. What you need, however, is a special interface box that joins the computer to the typewriter and translates the computer language to the typewriter's coding. Each typewriter model demands its own interface box. By the way, installing an interface is not a job for a layman. Only a qualified service technician should attempt it. You should also contact the manufacturer of your typewriter and see if installing such an interface will void the warranty on the machine.

My FM reception is driving me crazy. I followed the advice of knowledgeable friends and bought a real high-quality receiver with top specs. I even thought my apartment would put me in the perfect position to get great FM reception, since I can see from my kitchen window New York's World Trade Center, with all its broadcasting towers. The problem is that on most of the stations I listen to I get lots of noise and hazy distortion. What gives?—W. L., New York, New York.

What you're hearing is the insidious demon common to most big cities and some mountainous areas—multipath distortion, the FM equivalent to ghosting on TV. While you're probably receiving a strong signal from the broadcasting tower, you're also receiving lots of reflections from the buildings surrounding you. The problem is most acute with stereo broadcasts. For an immediate improvement, switch your receiver to "mono." The only way to clear up the problem permanently is to stop using that junky piece of wire the manufacturer of your receiver packed in as a dipole antenna. To zero in on the broadcast and thus minimize the multipath problem, you'll need a directional indoor antenna. These devices sell for between $40 and $80; you'll be amazed at the improvement you'll hear in your FM reception.

The loudspeakers I bought ten years have served me well and still sound pretty good, but they just don't compare to some of the newer speakers I've heard in friends' houses. I'm especially disappointed in their bass response. A buddy of mine with equally ancient loudspeakers told me that he corrected the situation by purchasing an equalizer; after boosting the bass response with that, his speakers sound terrific. Considering the prices of good new loudspeakers, is buying an inexpensive equalizer the right way to go?—A. C., Chicago, Illinois.

Yes, and no. Boosting low frequencies with an equalizer will, of course, create an audible difference. However, if you have a very low-powered receiver or amplifier, the boost may cause the amplifier to go into clipping, producing extremely harsh-sounding distortion in the process. We're also reminded of the old adage about trying to turn a sow's ear into a silk purse; today's loudspeakers are, in general, far more accurate and better balanced than older designs. Our best advice in this situation would be to shop carefully and audition a variety of loudspeakers across a wide price range; take along a favorite tape or record to try out with them. By playing music you know well, you'll be able to determine more exactly the specific differences among the speakers you're hearing. Finally, if you do decide to keep your old loudspeakers, before you invest in a bass-boosting equalizer you should try moving the speakers to a different location in the room. Placing loudspeakers on the floor and against the wall will result in low-frequency reinforcement, which might be all you need.

Recently, I purchased a wireless telephone and am madder than hell at the problems I've had with it. Every time a radio taxi goes by, the signals sound loud and clear through the telephone line. As if that weren't irritating enough, there are times when I pick up so much noise that I can't hear the person on the other end of the line. Have I bought a lemon or are such problems

common to wireless telephones?—S. T., Philadelphia, Pennsylvania.

You've got to remember that wireless telephones are really miniature radio stations. The possibility always exists, therefore, that the signal from another two-way radio will find its way into your conversation. Phone manufacturers realize this and vary their phones over several different frequencies to avert this problem. Return the set to the dealer and ask him to examine the unit for its frequency code; he will then give you an identical model, but one that operates at a frequency far enough removed from the interfering broadcasts to obviate the problem. Noise and static on wireless phones are the result of spurious radio frequencies generated by any number of devices; the most common offenders at home are fluorescent light fixtures. If you have lots of fluorescent lights in the basement or kitchen, you might find that clear telephone communication will continue to be a problem in those rooms. Some manufacturers claim that their designs are more resistant to both these problems, and people thinking of purchasing a wireless phone would be wise to examine the owner's manuals of the units they're interested in before committing to a purchase.

I've seen lots of ads from tape manufacturers claiming that their high-bias chrome or chrome-equivalent Type II tapes will make even inexpensive car stereos sound better. To be perfectly frank, the notion of using Type II tapes on a system that isn't designed for them strikes me as nonsense. What are the tape manufacturers up to?—P. T., San Antonio, Texas.

They're trying to sell cassettes, but that doesn't mean that their argument doesn't have any validity. In fact, these high-bias chrome or chrome-equivalent Type II tapes will, all else being equal, sound better in most car systems than the ferric Type I tapes, for which the systems are designed. It's not because car decks are set up to perform better with chrome tapes; in fact, it's precisely because many lack the correct playback equalization to reproduce them accurately that makes the difference. While musical accuracy is something audiophiles strive for in their home systems, a bit of boost here and there in car stereo systems often improves the overall sound quality. This is especially true for high frequencies; with lots of padding in car upholstery and tweeters often mounted close to the floor, high frequencies can be dramatically reduced in loudness by the time they reach your ears. A recording made on chrome or even metal tape will, because of the equalization mismatch in the car, receive a boost in the treble region. While no longer accurate in the absolute sense, the net effect is often a brighter, more natural sound. Tapes that are Dolby B-encoded (but not decoded) will give similar results. Give it a try.

Most of the recordings I make on my VCR look pretty bad at the beginning; then they get better and better after I've watched them for a while. Later on in the recording, as the tape gets closer to the end, the problem returns. What's going on?—D. H., Great Neck, New York.

What you have are graduating "dropouts"—

something impossible in real life but common in the world of video. The problem comes from the videotape, not your VCR, and it occurs in varying degrees with absolutely every brand and length of tape. As a result of the in-factory tape-cutting and winding processes, the two ends of every videotape invariably carry a higher incidence of dropouts than the middle. You see the dropouts as "snow" and visual "noise," which decrease from the beginning of the tape and increase toward the end. The solution? Fast-forward for about a minute into each blank tape before you begin to record. Don't use the beginning and the end, especially if you're recording a movie such as Orson Welles' Touch of Evil or any James Bond picture, in which the first scene is the best of all.

I find the hand controller that came with my Intellivision video game console very uncomfortable to play with. Is there any way to replace the silly things with "normal" arcade-quality joysticks?—N. W., Kansas City, Missouri.

We wouldn't quite call it "arcade-quality," but there is one unusual accessory designed to make the Intellivision control more of a joy to hold. It's the Injoy-A-Stick, made by Laskey Video Distributing, 20 Morning Dove, Irvine, California 92714. For about $11, the little gizmo replaces the Intellivision movement disc, thereby giving you the familiar grasp of a more conventional joystick.

Carrying around a video camera plus a separate video recorder and battery pack is a drag, but I like the idea of shooting home movies on video. Doesn't anyone make a one-piece camera-recorder combination?—D. J., Seattle, Washington.

Well, every famous name in video equipment is working on prototypes of the kind of product you've described, and they'd all like to start offering them in this country as soon as possible. We assure you that if they had ironed out the technical bugs by now, you would have seen one-piece camera-VCRs long ago. So far, the closest anyone has come is a product developed by Future Technologies of Japan (Futek), which will be marketed in this country under the name of Elbex. It's a six-pound, one-piece camera–VCR using quarter-inch VCR format tape, with a black-and-white monitor, although recordings are in color. According to the manufacturer, it's scheduled to go on sale here sometime in 1983. But, frankly, we'll believe it when we see it.

You must get this question every day, but what's the real story: Which of the two VCR formats is better—Beta or VHS?—A. R., Carmel, California.

This question is often asked. But it's one that also needs frequent updating. In the eyes of almost every expert, including many of those professionally associated with one of the formats, neither of the two incompatible consumer video-recording formats incorporating half-inch tape is different enough from the other to make it "better" for most users' purposes. There are differences, though. In a nutshell:

Record/Play Time: Some VHS machines can record and play up to eight hours of material on one tape. But use of the longer record/play times invariably involves a slight deterioration of picture and sound quality. Also, some long-playing VHS recorders with three operating speeds cannot perform all their playback functions (such as freeze-frame, slow motion and scan) in all three speeds. In Beta recorders, the record/play time limit is five hours. However, a Sony accessory called a Beta-Stack permits several tapes to be recorded or played one after another to achieve several times the record/play time of VHS machines.

Size and Weight: It's a matter of ounces and quarter inches either way, depending on which year's model you measure. Each manufacturer tends to go smaller and lighter with its new products.

Audio: Some machines in each format offer stereo sound. There are more models of stereo VHS machines to choose from, but a Beta VCR from Marantz lists the most impressive audio specs.

Over-all Quality: Only diehard videophile fanatics seem to keep arguing about Beta and VHS recording quality, with the most zealous among them leaning toward Beta. But engineers at independent test labs stress that there's only the most marginal, tenuous evidence in favor of one system over the other.

Price: Like size and weight, this is one matter that fluctuates drastically with the introduction of each new generation of products, with no clear winner among VCRs in either format. Beta and VHS machines are priced competitively, although individual dealers may offer older models at significant discounts. In blank video cassettes, Beta tapes are generally a few dollars less expensive (as well as slightly smaller) than VHS tapes. In recorded tapes, prices are generally the same, although some titles cost $5 or $10 more on VHS than on Beta.

Durability: There's a popular myth that the heads of Beta VCRs wear out more easily than VHS heads, a misconception based on the fact that Beta machines (but not VHS models) have tape traveling along their heads in the fast-forward and reverse modes. No one—including engineers in the VHS camp—has yet to prove that such tape travel definitively leads to appreciable head wear under normal conditions. In fact, head wear is widely regarded as much more a function of a number of other variables (such as environment and VCR and tape maintenance) than a result of any format's tape-loading system.

Prerecorded Tape Availability: Because their customers tend to own VHS machines rather than Beta machines, some video stores have been known to carry a wider variety of VHS prerecorded-tape titles than titles in the Beta format. Beta owners should not be discouraged. Dealers can order any tape you want in either format. Every major tape distributor intends to continue manufacturing tapes in both Beta and VHS.

ME AND MY COMPUTER

Torrid tales of life in a two-terminal family. By Steven Levy

I don't know just when the notion occurred to me to have a computer in my home, let alone two. My science career ended during my freshman year of college, with a course called Math for English Majors. My electronics wizardry extends to setting up my stereo system whenever I move, and it usually takes a few tries before the speakers yield music. But my trusty Living Companion (hereafter referred to as LC) and I kept hearing that the modern age was upon us—that computers would make life a perpetual outtake from The Jetsons, where we'd romp in our electronic cottages and let the machines do the dishes, catch the evening news for us and flick out the lights when it was time for bed. And we heard rumbles of "computer literacy" becoming the new dividing line between haves and have-nots in the near-term high-tech future. Looming forebodingly was the prospect of being a computer illiterate, scrounging the streets in hope of a charitable

ILLUSTRATED BY IVAN POWELL

soul who might divulge the difference between a byte and a nibble.

Also, as writers, we were intrigued by the computer's word-processing capabilities. People we knew who used word processors would occasionally leave their display terminals to haunt cocktail parties, where they would bore anyone within earshot with tales of transcendental efficiency. Not since *est* had we witnessed such enthusiasm.

Finally, owning a computer would mean that I would never again have to spend a quarter in a video arcade. Not only that. Computer games are reputed to make Space Invaders and Pac-Man look simpler than tic-tac-toe. I was intrigued.

So, we decided to take the plunge. Since I was, you recall, the one responsible for setting up the stereo, I also took on the task of researching this bold leap into the future. It was *not* easy.

I sought out experts, people who knew what they were talking about when they spoke of personal computers. Indeed, they were impressive. Their advice oozed with authority. Unfortunately, the advice of each expert invariably canceled out the wisdom of the one before. What did become clear was that we wanted not just word

processors, but full-range computers, which, if properly equipped, not only replace typewriters but also do all kinds of things, such as balance your budget, hook into data banks and play games. We also took to heart the advice of an acquaintance who teaches computer science and lives with a writer: "Get two computers. If we'd bought only one, we'd have been divorced long ago, fighting over who gets to use the machine."

Off to the computer stores. In the first place we visited we had to wait for 20 minutes while the salesman finished a game of Missile Command on an Atari 800. After his cities were obliterated, he spoke a stream of incomprehensible stats and figures, dotted with RAMs, ROMs and megabytes. He sat us down at an Apple and allowed us to watch him play with it. We had no idea what he was doing. Words, numbers and imposing symbols marched on the display screen with *2001*-like precision. But when we asked what *this* computer had that *that* one didn't, he couldn't tell us.

Buying a computer, we found, is an exercise in faith. Though the tricks, the bargaining and the nagging feeling that you're being rooked are reminiscent of the ordeal

of stereo shopping, computer buying has no equivalent to the experience of listening to music through the equipment you're considering, unless you're already familiar with using computers. When *I* sat down to actually "interface" with the computer, I felt totally incapable of evoking any response that might help me evaluate the machine. Was this a taste of electronics writer's block? I took my first, tentative step: I poked a letter on the keyboard and it showed up on the screen. I hit the "return" button and was rewarded with this remark: "? SYNTAX ERROR." (I had no idea then how familiar those words would become.) The salesman put in a word-processing program and let me type for a while. All I could come up with was nursery rhymes.

The folks at the next store were friendlier, but vague on service. They didn't have a policy of "burning in" the computer before delivery—which means running it like crazy to see if something's wrong. This step is supposed to be essential, since faulty computers tend to break down sooner rather than later. All in all, none of the stores we visited gave us much assurance that a computer expert would come running with the modern equivalent of a screwdriver at the first sign of trouble.

So LC and I decided to buy our machine, at premium prices, from a computer consultant. He was a friendly guy named Bill whom friends had recommended. You might be able to find others like him through computer clubs in your area. Like many consultants, Bill is not affiliated with any one computer manufacturer. He does know where to buy at discount, but he charges his customers list price, pocketing the difference as payment for his services. Many work this way; others charge by the hour. A consultant's modus operandi is to hear you out, gauge what kind of tasks you'll need a computer for and then choose the equipment that suits you best. Being programmers too, consultants can also custom-design software to your needs. In most cases, the consultant installs the system for you. But, best of all, Bill offered follow-up. He promised to take our untrained hands and guide them through the mysteries of computerese.

Bill recommended Apples, with a word-processing package called WordStar, and we agreed. With a 48K built-in "memory," each "K" corresponding roughly to 200 words, an Apple II Plus costs only $1530. But computers, it turns out, don't cost nearly as much as the items you need to run them with. Although these items are called "peripherals," they're really essentials. You can't use a computer without a CRT monitor (screen), $150 to $1100, or an RF converter ($35) so you can use your TV as a monitor. And what are you going to store your programs on? Disc drives, of course, which hold the "floppies" that the computer "reads" to allow it to do whatever it does. Two drives are recommended: $1170. You want WordStar? To run it, you have to

10 Questions You Should Ask a Computer Salesman

1. What's the price—including everything? After you explain what you want to do with the computer, have the salesman show you all the "peripherals" you need. Add their cost to the price of the computer itself and compare with other systems.

2. Is the price going to come down drastically? For example, a company recently introduced an acceptable letter-quality printer that was 50 percent less than anything else comparable. A smart dealer will know if one of these price breaks is imminent; an honest one will tell you about it.

3. Who makes this machine? There are fantastic computers available from little-known companies, and some are real bargains. But if, like many shoestring computer operations, the manufacturer goes bust, you could be in trouble.

4. Can this computer grow with me? Some machines have room for expansion "cards" that will increase memory, hook you to esoteric peripherals, even allow you to duplicate functions of more expensive machines.

5. Can you show me the software available? Unless you're a wizard programmer, you'll need commercial software to run your computer. Make sure you *see,* with your own eyes, what will run with your machine. Again, buying a name-brand computer will not only give you a wide choice of available software (listings of Apple programs would fill a large telephone book), but will also assure you that

more software will be written, since a market exists for it.

6. Do you do repairs here? It's no fun to have a computer for a week, find something wrong, then wait two months while your dealer packs it off to the Silicon Valley for adjustments. Best of all is a dealer who will make house calls.

7. Do you "burn it in"? Once a computer gets going, it usually stays going, since there are almost no moving parts. Often, however, a new computer will have "bugs" that a first-time user might not be able to diagnose. The best computer dealers will give your machine an intensive shakedown cruise before they install it in your home.

8. Do you install? Some dealers charge $100 or so. But more important is that they allow time at your home to get everything working properly.

9. Will you teach me how to use it? Some dealers give classes in programming or in using popular software like VisiCalc or WordStar. Try to get a few hours of training included in the purchase price.

10. Will you be helpful if I call you for something trivial? Believe me, when you use a computer, you get stymied by the stupidest things. What you need is someone who will take your call, listen to your tale about the mess you've created and then tell you something you can do in a second to make everything all better. If you don't feel the person you're buying from is going to do that, buy somewhere else.

juice up the computer with a CP/M operating system and Z-80 circuit board: $399. And you have to buy a card to reformat the screen from the usual 40 characters a line to a more conventional 80: $379. Want to communicate with other computers or data banks? A "modem" hooks the machine to the phone line: $275 to $290. And you need a printer! Seven hundred dollars is about the cheapest good one available; another $150 to $300 gets you a card that interfaces the printer with the computer.

None of this includes software, the programs that run the computer (if you think of computers as stereos, software is the equivalent of records). To begin, we paid $495 for the word-processing program called WordStar. And, at $30 a shot, a couple of games.

We paid, we paid. Bill came and installed the computers. LC had been worried that the introduction of two computers into our one-bedroom apartment would make it look like some sort of digital assembly line. But it wasn't so bad. LC's fit neatly on her butcher-block desktop area in the bedroom. (The typewriters were relegated to the closet.) And in my living-room work area, the other Apple looked rather benign, almost as nonthreatening as a typewriter. On top were disc drives, which look like tiny file cabinets, and alongside was the CRT, which looked no more exotic than a portable television. Not that the machines were *invisible* or anything. Just unobtrusive enough so that our home was still a home.

Psychologically, it was another story. It was extremely intimidating, this alien intelligence. What did my Apple think of *me*, I wondered.

Maybe it was the level of awe in which I hold computers, but owning one took some getting used to. I mean, the thing just *sits* there, waiting for you to think of something it can do for you.

After a few days of the electronic equivalent of dipping my toes in the water, I plunged in head first. I took profound reassurance from Bill's promise that "nothing you key in will hurt the computer." I became familiar with The Interfacing Experience. Things started to happen. And though living in a computer-equipped household hasn't yet flung me into a binary utopia, it has made things around here much more interesting. You can get an idea of this from the things I've managed to do with the Apple so far:

Word-Processing. This was everything I'd hoped for. It took a little while to get used to the screen, but writing on a computer has been a revelation. First of all, it's not really much more difficult than typing. I was able to do it right away, and pick up some shortcuts as I went along. Because it's so easy to make revisions, I find myself sharpening my work much more. My letters and stories have no type overs and very few mistakes. I've retired my white out.

The only problem is the danger, always lurking, that a day's work will be wiped out

by a sudden surge of electricity, or by my pressing "DELETE" when I really meant "SAVE." But you learn to be careful. The only disaster came one day when the Apple inexplicably started beeping. And kept on beeping. Each time it beeped, an exclamation point appeared on the screen. The beeps sounded out closer and closer together, until they became one continuous screech, and the exclamation points appeared so quickly that they literally blurred as they flashed on the screen. I tried every command I could think of, to no avail. If I turned off the power, the last 20 minutes of what I thought was ageless prose would be wiped out forever. (It existed only as binary notations in the Apple's memory. Any computer wipes its RAM memory clean each time you turn it off unless you instruct it to save your work.) However, the computer looked as though it might explode if I didn't turn it off. After an agonizing few moments, I cut the power—and lost my story. Fortu-

nately, the "berserk mode," as I came to call it, has not recurred. When I told Bill about it, he shrugged. "Those things happen," he conceded, "and you never do find out why."

Programming. This is the tough one. Programming—giving the computer commands in its own language—is what makes people, especially people over 18, computerphobes. But I figured I'd take a step into the future and try rapping with the Apple. After reading horror stories about it (*Newsweek* reporter presses Control-C key...hospitalized with future shock...prognosis grim...), I found that learning BASIC, the most common microcomputer language, is not—repeat—not that hard. I used the little tutorial book that came with the Apple, and in a few hours I had written a program that figured out a baseball pitcher's earned run average. I admit that the concentration required to program is often too much for me (one mistake and the whole program,

Everybody's Doing It: Some Average Guys Who Plugged In

Adam Richard is a 33-year-old vice-president of a New York marketing firm. He didn't mean to become a computer junkie. He bought an Apple II Plus because computers "are a skill everyone's got to have in five years." But soon he found himself programming ten hours a day. He began writing BASIC programs instead of buying software. Some of those helped him in the statistical work for his business. Others were more in the line of experimentation. And the games he bought and played were strictly for fun. The only drawback he sees is that playing with the personal computer "cuts down on socializing. My wife has threatened to take an ax to it."

•

Bill Lovegren, a 35-year-old telephone company engineer in St. Paul, Minnesota, got his Texas Instruments TI-99/4 computer about two years ago. He is currently working on a program to handle all his home finances—credit cards, checkbook, taxes, the works. But sometimes he has to wait in line for the computer, since his three kids like to play TI Invaders and Number Magic. Lovegren thinks his three-year-old has a head start because of the Early Learning Fun program, which teaches the alphabet, counting and shape associations, so he'll gladly postpone programming, but only so long. An inveterate tinkerer, he loves his computer. "Let me tell you the smartest thing I did," he says. "I took an elementary programming course at the local community college—*before* I got the computer. Then I knew what to buy, and how to use it."

•

Troy Hummon, 22, is from Laurel, Maryland, and holds a day job as—

surprise!—a software engineer. At night, though, he forgets about the commercial data arranging and plays happily at his Atari 800 Home Computer. "I looked around for a year before I got the complete system—dropping $3000 is a big thing for me," he says, and except for occasional bugs, such as the "disc drive that would go to sleep" at inopportune moments, he's happy with it. A modern man, Troy has begun work on his version of The Great American Computer Game. "When I got the game program running, I had to show it to everyone," he says, "but they would complain about it not being responsive or that the guy doesn't disappear when you shoot him," Troy says of his Alien Attack. "So I would fix it up. One guy played it for two hours, and that was before I was even half finished perfecting it!" But is it better than Space Invaders? "Oh sure," says Troy. "Well, *I* think so."

•

Jack Gorman has no illusions—at 43, he's playing catch up to a generation that has picked up computer skills, and that includes his three kids, in high school and in college. "As a businessman who looks to the future, I realized that computer literacy is essential," he says, explaining why a year ago he purchased a Radio Shack TRS-80 Color Computer. Armed with a good background in math, he's taught himself enough on the machine to write a few "fairly elaborate" programs to use in his business, a Chicago boatyard. Gorman is not at the point yet where using his admittedly "clumsy" programs saves him much time, but he's positive that the experience is worthwhile. "You've *got* to know computers to stay ahead," he says. "My competitor up the river has an Apple."

WHAT COMPUTERS CAN DO FOR YOU

Finally, a no-nonsense guide to the best programs and hardware. By Ivan Berger

Sure, you've seen all the headlines. One day, computers will run the world. That's nice. But for those of you who don't know your ROM from your RAM, there's only one question that comes to mind: What can computers do for you? The answer, we're happy to report, is plenty.

With the right program (software) your computer can be a secretary with some editorial sense, a game opponent, a multi-colored paintbrush, a filing cabinet with built-in file clerk or a puzzle that can take you months to solve. And that's just scratching the surface. A computer can do almost anything that involves manipulating information—and a good many things that don't—provided it's programmed to do so. But without programs, it's as useful as a tape deck without cassettes.

A program is simply the set of detailed, custom-tailored instructions that tell the computer what to do and when to do it. Program writing is an art, though, because computers are, despite their power, as literal and intelligent as light switches. A computer might even be thought of as a bunch of switches, well over half a million of them.

But with so many programs from which to choose, where do you begin? Shopping for software isn't as easy as buying a new screwdriver or a bottle of Scotch. If you already have a computer, you'll find that many programs will not run on it, either because they have been designed for altogether different machines or because yours lacks some feature (extra memory, a disc drive) that the program requires. If you're planning on purchasing a computer now, look first for the programs you want and need. Then buy the computer that can run the largest number of them. If the programs you're interested in *don't* match your machine, don't despair. The software market is expanding so rapidly that the chances are good that the program you want is being rewritten right now to fit your machine. Check your local computer dealer or write the computer's manufacturer. They should be able to tell you what's soon to be on the shelves. You can also consult computer dealers for similar programs that will run on your computer.

It's difficult to get the full flavor of a program from a catalog description, and unfortunately you usually can't take a program home to try it out. However, dealers often let you run programs at length in their stores and friends with computers will be overjoyed to give you a full demonstration of what their new babies can do. To give you a head start, we've previewed in depth some application and game programs and summarized a variety of others—for all the times in your life.
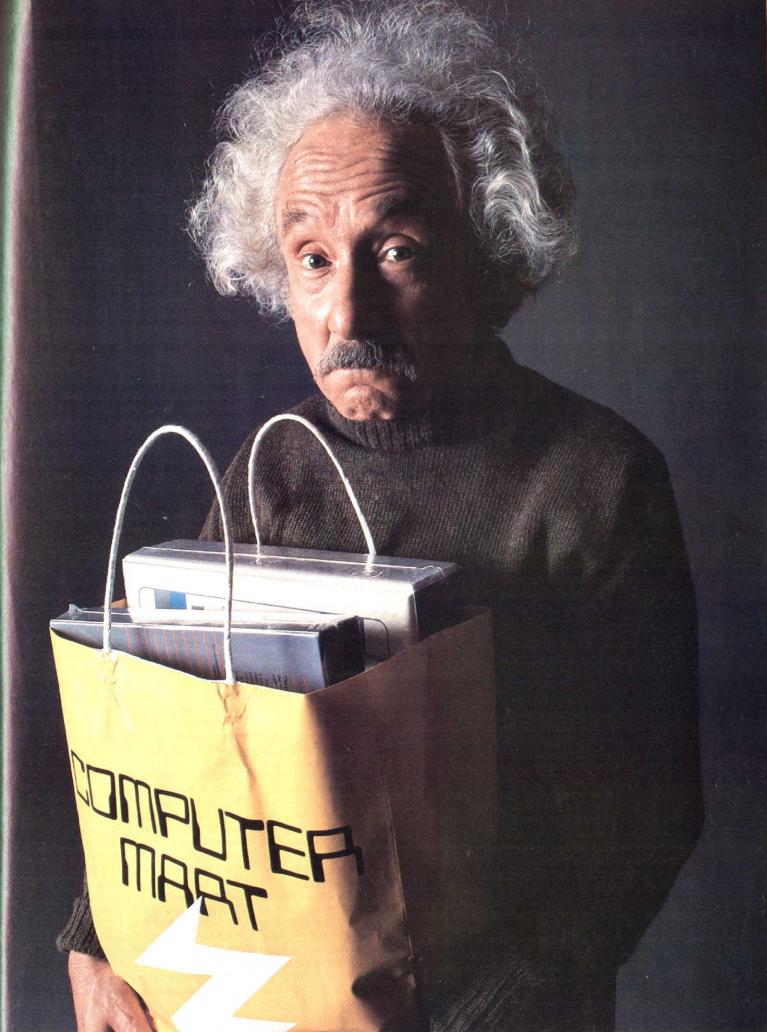
BUSINESS CAN BE PLEASURE

Probably the most popular program of all time, with more than 250,000 copies sold so far, is **VisiCalc,** the original "electronic spreadsheet." It's like an elastic bookkeeping page, which expands to hold up to 254 rows and up to 63 columns of figures and automatically calculates relationships between them. For example, tell VisiCalc that your gross profit equals your sales volume less your cost of merchandise, and it will automatically calculate that profit for each month's sales and merchandise-cost figures.

Better yet, it can perform "what-if" calculations. You can make projections based on assumed costs and revenues, then see how all your figures change—in seconds—if you vary your assumptions. Doing that by hand can take hours. VisiCalc can automatically count items, find the largest or smallest entries in a category, calculate averages, square roots, logs and trigonometric functions and automatically round fractional figures to the nearest whole number. If you want to compare items in widely separated rows or columns, Visi-Calc will highlight them.

VisiCalc and other spreadsheet programs aren't much fun, but they're invaluable for almost any business use—large or small. VisiCalc runs on 12 computers, including the TRS-80, the Apple and the IBM Personal Computer. There are also many other electronic spreadsheets available, such as CalcStar, Plan80, and Supercalc. Your computer dealer will know which ones will work with your computer. (*VisiCalc* is around $250. Manufacturer:

PHOTOGRAPHED BY ROBERT GRODMAN
MAKEUP, LOUIS STAMM; BAG DESIGN, LYNN CHRISMAN.

"As you progress you learn how to read murky inscriptions and why the villagers are rioting against you."

VisiCorp, 2895 Zanker Rd., San Jose, California 95134. 408-946-9000.)

Other business programs you might want to check out are:

Dow Jones News & Quotes Reporter. With the use of a phone modem and this program, you'll be able to retrieve past and current news stories and headlines from the Dow Jones News/Retrieval service, *The Wall Street Journal*, and *Barron's*, as well as quotations for more than 6000 companies traded on the major exchanges. ($135 for the Apple II Plus. Manufacturer: Apple Computer, 20525 Mariani Ave., Cupertino, California 95014. 408-996-1010.)

Money Maestro. A total home financial record-keeping package, the program organizes and categorizes your expenses, reminds you of monthly bills and keeps track of your budget. ($200 for the Apple II, IBM Personal Computer and most CP/M-based computers. Manufacturer: InnoSys, 2150 Shattuck Ave., Berkeley, California 94704. 415-843-8122.)

Personal Finance Master. This program tracks checks, deposits, payments, charges, IRA accounts and other records to give you a personal net worth statement. It will also budget expenses and cash flow, balance your bank statements and print checks on computer forms. ($75 for the Apple II, IBM Personal Computer and TRS-80 Model III. Manufacturer: Spectrum Software, 690 Fremont Ave., Sunnyvale, California 94087. 408-738-4387.)

Personal Tax Plan. A comprehensive worksheet designed for home use, Personal Tax Plan leads you gently through the intricacies of computing your current tax debt. Enter your gross income, filing status and whatever deductions are appropriate, and in less than a minute you are presented with a tabulated presentation of all inputted data as well as your final tax status. Based on your current tax data, the program also lets you form projections of your future tax situation should income, deductions or filing status change. Personal Tax Plan is self-prompting: Should you get confused at any point, a tap on a designated "help" key elicits a screen full of explanation. For 75 percent of its then-current price, the manufacturer will update the program for purchasers to reflect any changes in the tax law. ($130 for the Apple II Plus. Manufacturer: Aardvark Software, 783 N. Water St., Milwaukee, Wisconsin 53202. 414-289-9988.)

HIGH ADVENTURE

If VisiCalc is the most popular single program, games are the most popular program category. Walk into any computer store, and you're almost sure to find at least one running. My favorites are adventure games, which couldn't exist without computers. In some adventures, you're in teletype communication with a robotlike figure, who acts as your surrogate in strange and perilous situations. He tells you what he sees and what he does in response to your two-word commands. In others, you *see* the adventure and direct your surrogate with a joystick.

What kind of adventure? **ZORK** starts peacefully, with your robot surrogate outside a deserted cottage; it isn't till you get inside that you discover monsters lurking in the cellar. And getting inside isn't easy, till you find the way. (When my robot couldn't succeed with commands like "OPEN WINDOW," frustration led me to command "TAKE WINDOW." It didn't work—but at least the computer replied politely: "NICE TRY!" it told me. (*ZORK* is $40 for the TRS-80 Models I and III. Manufacturer: Radio Shack. See your local dealer.)

Voodoo Castle (Adventure No. 4 in a series that so far includes 12) starts out with a bit less charm. Your character is alone in a chapel with a coffin. Examining the coffin yields an inscription that explains the game (a nobleman is cursed, and can't flee till you find a way to free him) and reveals a body wearing a magic ring.

How do you free him? I don't know. I've been playing the game for a month now, on and off, and so far I haven't found the answer. What I have found, though, are 18 "rooms" (new scenes in adventure games are usually called that, even when they're forests, boats or planetoids), including a parlor, a ballroom, a torture chamber and a laboratory.

Eighteen rooms are more than I can possibly keep track of in my head. That's especially true when you consider the odd layouts of adventure-game rooms, with halls that lead only one way and exits that take you back to the room you just exited. Adventure players therefore spend a good deal of time drawing maps—not just to plot the rooms but also to recall their contents. After all, you wouldn't want to waste time hunting up the witches' brew when you *really* need the kettle of soup, now would you? Be forewarned: Playing these games can take months. As you progress, you learn a few tricks (how to read murky inscriptions, how to raise the dumbwaiter, why the villagers are rioting against you), only to be wiped out by deadlines or enemies, and have to start the game again. In some games, however, you can save your progress on the same disc as the program, so you can pick up next time at the point you stopped. (*Voodoo Castle,* by Scott Adams, is $30 for the graphic version for Apple II Plus and Atari 400 and 800. Text

version also available for those computers plus the TRS-80 Models I and III, the IBM Personal Computer and the Texas Instruments Computer. Manufacturer: Adventure International, Box 3435, Longwood, Florida 32750. 800-327-7172.)

MASTER OF WORDS

As much as I like adventures, the software I cannot live without is my word processor, a Radio Shack program called **SCRIPSIT.** It turns my computer screen into a magic slate, on which I can write anything. And I can erase the copy, change it, add to it, insert new material in the middle and have it all come out on paper as smoothly and perfectly as if I'd asked an expert typist to redo a blotched and tattered manuscript. If I suddenly discover that I've spelled a name wrong, a companion program, **SCRIPSIT Dictionary,** enables my processor to find every place I've made that error and point it out within seconds—no matter how many times I've made the mistake. Do I need a specific heading on each page? Then I merely type the heading once, and my processor inserts it wherever it's needed; it also automatically numbers my pages.

Word processors aren't just for writers; they're for anyone who deals with words. Businesses use word processors for correspondence, because it speeds up typing and allows last-minute revisions without requiring that secretaries stay overtime. Law offices use them to create custom contracts by shuffling together stock clauses previously saved in the computer. Some word processors can also interact with mailing lists to generate personalized form letters.

Every word processor (and there are scores of them) has its own idiosyncrasies. SCRIPSIT, for example, is easy to learn, fairly fast to work with and gives me a good deal of flexibility in laying out my pages. But it can't do everything some other word-processing programs can: It can't tell my printer when to shift from regular to boldface, italic, or different-sized type. It can't automatically place footnotes in proper position on a page. It can't handle documents longer than about 6500 words (though such documents can be divided into chapters and each handled separately)—but then, I rarely write a single article or book chapter that long. Nor does it interface with mailing-list programs. However, the new SuperSCRIPSIT and SCRIPSIT 2.0 should be out by press time and will remedy some, if not all, of these omissions. (*SCRIPSIT* is $100 for the TRS-80 Models I and III. *SCRIPSIT 2.0* is $400 for the TRS-80 Model II. *Super-SCRIPSIT* is $200 for the TRS-80 Models I and III. *SCRIPSIT Dictionary*, $149 for the TRS-80 Models I and III; $199 for the TRS-80 Model II. Manufacturer: Radio Shack. See your local dealer.)

Some additional text programs include:

Grammatik. Working in conjunction with your word-processing program, Gramma-

tik will scan your letters and reports, alerting you to poor usage, incorrect capitalizations, some misspellings, trite phrases and sexist language. It suggests possible alternate phrases and usage, but lets you make the final decision. ($59 for the TRS-80 Models I and III; $150 for CP/M computers and the IBM Personal Computer. Manufacturer: Aspen Software, P.O. Box 339, Tijeras, New Mexico 87059. 505-281-1634.)

WordStar. One of the most popular word-processing programs, WordStar is specifically designed for nontechnical users. Text can be inserted, deleted, moved, copied and lots more. One of the best features of this program is that the page you're working on will print exactly as it appears on the video display. ($495 for CP/M-based computers and the IBM Personal Computer. Manufacturer: MicroPro International, 33 San Pablo Ave., San Rafael, California 94903. 415-499-1200.)

INFORMATION RETRIEVAL

I have no mailing list program. But I get a lot of use from a more general program, called a "data base," that can be used as one. Data bases are something like fast, cross-indexed card files that let you retrieve the same information in a number of ways. For instance, using a program called **Profile** to keep track of the long-distance numbers I call, I can print out indexes either by name (so I can find the numbers I want to bill) or by number (to analyze my long-distance charges). One organization I belong to uses the same program for its membership list; it prints out an alphabetized list for a main membership roster and separate lists of those who have and have not paid their dues. (*Profile*, $80 for the TRS-80 Models I and III. Manufacturer: Radio Shack. See your local dealer.)

Profile is fast, but it's not the most versatile or sophisticated data base program. I was recently introduced to **PFS:File,** a database program for the Apple II and III. It can do tricks that Profile can't, such as printing out only those addresses that fall within a specific range of ZIP codes, or printing out only California members of the ACLU whose names begin with "A." (*PFS:File* is $125 for the Apple II; $175 for the Apple III. Manufacturer: Software Publishing Corp., 1901 Landings Dr., Mountain View, California 94043. 415-962-8910.)

GAME TIME

You need a good data base to keep track of all the arcade-type games now available for home computers. You can find them for nearly all computers, though so far I think they work best on the Apple II, Atari 400 and 800, Radio Shack Color Computer and Commodore VIC 20, all of which have the capability for color and minutely detailed graphic images.

Take for instance **Star Raiders,** an Atari game. You start out with a detailed, sector-by-sector map of space, which shows you at a glance where you are and which sectors hold The Enemy. In order to move to a sector you must enter hyperspace, where stars zoom past you like trees on a country highway, accompanied by an accelerating and decelerating whoosh over your TV's speaker. In the center of the screen, crosshairs show where you (and your photon torpedoes) are aimed. A radarlike "Attack Computer Display" inset at the lower right shows enemies too far off to be seen with the naked eye. Press a button on the computer's joystick, and your photon torpedoes fire, accompanied by blasting sounds from your TV speakers. You can check an inset Control Panel Display or the Attack Computer Display to verify a hit.

If the enemy hits you, however, you see a blast of light; then, on advanced levels, you hear an alarm and see a damage report on the screen if your shields weren't strong enough to completely withstand the attack. As the game goes on, your ship's energy runs low, and you must seek a star base for refueling—and repair, if you've been hit.

Like most arcade games, it's simple-minded, fast and fun. And like most home-computer versions of such games, its images are not as brilliant and detailed as the ones in the arcades. Then again, arcade machines are more expensive than most home computers, and are built to play only one game—less flashy graphics are the price you pay for the computer's lower cost and greater versatility. If a game is making a lot of money in the arcades, it may take a while before it's released for home use, as happened with Space Invaders and Pac-Man. (*Star Raiders* is $45 for the Atari 400 and 800. Manufacturer: Atari, Home Computer Division, P.O. Box 50047, San Jose, California 95150. 800-538-8543.)

Many standard board games (Monopoly and Scrabble among them) are available in computer form. Of course, you can save a few thousand dollars by playing these games the old-fashioned way, *sans* computer. But playing them that way requires a real-life opponent. Now, let your computer be your friend. How hard do you want the opposition to be? Most strategy games let you pick any of at least three levels of skill or difficulty. **Reversal** (similar to Othello and Reversi), by Kathe and Dan Spracklen, for example, has three levels of strategy and nine levels of play in each. You can choose from a skilled amateur level that takes 2.5 seconds per move to an introspective expert level that takes half an hour.

Reversal keeps the game honest by showing you what squares you can move to, and it helps you keep track of how you're doing, both by keeping score and putting smiles on the face of the winning side's men, frowns on the loser's pieces. You can play "what-if?" by going back any number of moves and starting over from that point. If the game's too hard or easy, you can change skill levels as you go. A "hint" feature lets you ask the computer for impartial advice. (*Reversal*, by Kathe and Dan Spracklen, is $30 for the Atari 400 and 800; $35 for the Apple II and II Plus. Manufacturer: Hayden Software, 600 Suffolk St., Lowell, Massachusetts 01853. 617-937-0200.)

Programs for more sophisticated adult gaming include:

Pro Football. Give this program ten minutes a week worth of input on your favorite teams and it will reward you with probable

Why Can't They Work Together?

There are several reasons why different computers usually can't run one another's programs.

One is that different processors—the computer's "brain"—speak different machine languages. The 6502 processor (used by Apple, Atari and Commodore) has 56 basic instructions; the Z80 (used by Heath, Zenith, Osborne, Radio Shack, Sinclair and Timex) has over 150, all different from the 6502's; and the 8088 (used by IBM) has even more.

But even when computers have the same processor, other differences can intrude. A program written for a computer screen display of 24 80-character lines may not work right on a 16-line 64-character display. Programs distributed on one disc or tape format won't be readable by computers that use different formats.

The only real attempt at a computer lingua franca is an operating system called "CP/M" (Control Program/Microcomputer), which is used by many Z80-based computers. Dozens of manufacturers, including Heath, Zenith, Osborne, Xerox and Hewlett-Packard, make it available for their computers. The TRS-80 Models I, II and III can be adapted to use it, but the adapters aren't available through Radio Shack. Since the Apple has the wrong processor for CP/M, you must install a card (about $400) with the right (Z80) processor to run CP/M. A similar card is available for the IBM Personal Computer, although the IBM's 8088 processor can run a modified version of CP/M without help.

The first computers using CP/M had only black-and-white screens, so most CP/M programs are designed for black-and-white use, to maintain compatibility. As a result of this (and other features that CP/M computers usually share, such as plentiful memory), most of the more than 600 programs written for use with CP/M are for business and professional use, although games and such do exist.

THERE'S MORE TO LIFE THAN PAC-MAN.

There's Donkey Kong.

It's more than just a game now. Sure, you can finally fight Communist Mutants From Space. Of course, you can lose your luggage and save your girl. And, yes, you can even buy home video games that actually talk to you. But that's not the big news.

The big news is big bucks. At a toy fair in February, Coleco announced that it would soon enter the home video game market. It was just a statement of intent. But in the first quarter of 1982, Coleco stock appreciated in value more than any other on the New York Stock Exchange.

In July, with the Coleco system still not off the production line, the company announced a li-censing and distribution agreement with CBS, the TV company that had just signed a letter of intent to buy the Ideal Toy Corporation. In the Coleco deal, CBS would get the distribution rights to ColecoVision consoles and cassettes everywhere outside the U.S. except Canada and Japan. Small potatoes? No; actually, by 1985 it will be a rather big slice of a $2.4 billion pie.

Meanwhile, somewhere in the Silicon Valley, Activision, a three-year-old software company that was founded on less than $1,000,000 in venture capital, reported that its 1981 sales had reached $66,000,000, an increase of 1000 percent over sales in the previous year. By spring

1983, Activision, with no hardware for sale and a relatively modest 18 game titles on the market, expects to break $150,000,000.

And Atari, which started the whole business some five years ago, reportedly managed to double its receipts last year, with a take of $1.2 billion. That's billion, with a "b."

In 1981, Atari had a grip on close to 85 percent of the market, a market that had already expanded fourfold since 1980. Last year, Atari sold more than 4,000,000 game systems and 30,000,000 game cartridges. In the first half of this year, Atari sales were more than double those from the same period last year.

All these big bucks have brought some even bigger battles. New games, new gimmicks. New machines, new cartridges. New guns, new ammo. Here's the latest from the front:

Atari has just made its own Video Computer System (VCS) 2600 look like a Chevy Nova. Its long-awaited Super System, the **Atari 5200,** threatens to become the machine against which all others are measured. At a list price of $249, the 5200 is intended to be a technological step up from the 2600, not a replacement. Yet.

The console was released in October, and Atari will have 10 cartridges out for the 5200 by Christmas. While many of the titles will be old Atari favorites **(Pac-Man, Space Invaders, Defender, Missile Command, Super Breakout),** you will not be able to use your old cartridges on the new system. Not yet. An adapter that will allow you to do that won't be on the market until some time next year.

Why bother, then? How much difference could there be? A lot. The graphics on the new system are just short of magical. You remember the George Plimpton commercial for Mattel's Intellivision—the one where the crowd cheers for the realism of Intellivision baseball and all but laughs at the primitive simplicity of Atari baseball? Well, they won't be laughing anymore. Atari has caught up and even gone a few runs ahead. In the new Atari **Baseball,** pitchers can throw knuckleballs in addition to their inside and outside fast and slow pitches. There's even a relief pitcher warming up in the bullpen, just in case. The batters can hit pop flies, line drives and grounders (a feature purists have thought was a long-standing fault of Intellivision). Runners can slide, steal, even tag up on long flies. Defenses can be changed, allowing fielders to make running and diving catches.

In addition to new, improved versions of baseball, football and soccer, some top arcade games will make their first home appearances via the 5200. Among them will be **Centipede** and **Qix.**

The new system will also have new controls. A universal controller combines the operation of a joystick, paddle and keyboard in one unit. Good news for left-handers, as well as people who don't like to

keep pulling plugs. We found the new controls have all the features of Intellivision's, with the added precision of a joystick instead of a floating disc.

Atari seems to have thought of everything. You know the TV screen static that assaults you in between cartridge changes? It's gone. The new screen will black out and stay silent.

And coming next year for the 5200: a **Trak-Ball control,** allowing for 360-degree maneuvers; and a **voice synthesizer module**—something Intellivision is already pushing.

Of course, Atari hasn't forgotten the loyal order of 2600 owners. New cartridges for the old unit include **Raiders of the Lost Ark,** a very detailed game in which Indiana Jones journeys through 13 rooms full of snakes and whips and pits and knives, searching for the lost ark only he can save.

Then there's **Frog Pond** (a tentative title as we go to press). This is a cute little game where two frogs perched on a log battle to be ruler of the swamp. Whichever can zap the most flies with his tongue wins.

There will be four new, improved sports

How to Beat Donkey Kong

The first thing you should know about Donkey Kong is that it has nothing to do with donkeys. In Japan, where a company called Nintendo introduced the arcade game that would sweep the States, the slang word for "crazy" sounds very much like the English word "donkey." So the game, then, is really Crazy Kong. Or, in the true spirit of video games, Krazy Kong. And there *is* a Kong: A giant gorilla who looks something like King Kong has captured a blonde who looks something like Fay Wray. He has taken her to the top story of a low-rise, skeletal Empire State Building. The object is for you, on a series of precarious girders, to climb to the top, dodging fireballs and barrels being thrown at increasing speed and in unpredictable directions by the gorilla, and save the girl. Your character, and our hero, is Mario the Carpenter, a very Italian-looking chap who leaps and hammers his way to the top. God knows what the Japanese had in mind.

As the arcade version of the game rockets to the top of the coin-op jackpot, Coleco has just come out with three home versions of Donkey Kong. The ones for Atari and Intellivision units are fun, but nowhere near as authentic as the one for ColecoVision. Coleco isn't dumb.

Since the Coleco version is more complete than the others, we've concentrated on that one. Those of you with the other two versions can make the minor adjustments on your own. If you're familiar with the arcade version, you'll notice some differences in the home version. Among them: Coleco offers one less screen (or situation board), one less row of girders in the electronic Erector set, and, for some strange reason, Mario never physically touches the girl. Just as he gets to the top, you flip to the next screen, making this a "G" rated version of the original.

Anyway, here's how to play it—and beat it!

Objective: To save Mario's girlfriend from Donkey Kong by reaching the top of a steel structure or collecting all the "rivets" on a certain screen. Speed counts. The faster you move, the more points you save. You move Mario over

girders and up ladders, make him leap over tumbling barrels and dodge lethal fireballs, have him collect rivets and jump onto fast-moving elevators.

Selecting the game: Buttons 1–8 on the keypad allow you to select a game option. There are four skill levels. Each can be used by one or two players.

Controls: Very simple. Use the joystick to make Mario run. Move it left or right and he runs in that direction. Move it up or down and he climbs or descends a ladder. The red button is used to make Mario jump. He can jump while standing still or running. He cannot jump while on the ladders.

The screens: There are three different board situations that keep repeating:

1. *Girders* (also called "Ramps" or "Barrels"): You run along each girder and climb up to the top to get the girl.

2. *Rivets* (also called "Bridges" or "Fireballs"): Each girder has two rivets. You run or jump over them to make them disappear. Collect all the rivets and go to the next board.

3. *Elevators:* The object is to jump on a series of fast-moving construction elevators that take you to the top.

Scoring: Jumping a barrel or fireball gets you 100 points. Eliminating each rivet is worth 100 points. If you jump to grab one of two hammers and smash a barrel or fireball, it's worth 300 points. There are even points for chivalry. If, on the rivets or elevators screens, you collect the girl's purse, hat or umbrella along the way, you get an extra 300 points for each. There's also a time bonus. At the start of each board, a point total appears on the screen (between 4000 and 8000, depending on the level). Those points tick off quickly. The longer it takes to get to the top, the more points you lose. Obviously, the faster the better. When the bonus score gets to 1000, a warning sound begins. If it gets to zero, Mario dies. Mario also dies by being hit by a barrel or fireball, falling or jumping into an empty space (rivet gap), or running smack into Donkey Kong.

Winning strategies: After many hours of play, we've created some simple patterns that work well—well enough to easily

games for the 2600 (not to be confused with the new, improved sports games for the 5200). **Baseball, Volleyball, Football** and **Soccer** have Activision-like graphics. And that's good.

But the biggest game news from Atari might be **SwordQuest,** a four-cassette video adventure challenge that could take more than a year to master. Each game of SwordQuest takes you through a different elemental world—earth, fire, water, air. The knowledge gained in mastering one cartridge is needed to move on to the next.

In **EarthWorld,** the first of the series, you move through 12 zodiac rooms equipped with magical objects that open doors and release clues. There are four battles along the way. Make one mistake at any point and you return to "go." There will even be special comic books (put out by DC Comics) to help you unravel clues and piece together a treasure map.

Part two of the series, **FireWorld,** will be out in November. **AirWorld** and **WaterWorld** will follow next year.

And, just in time for Christmas, Atari will be releasing an **E.T.** game, something Steven Spielberg has helped create.

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The big news over at **Mattel** is the arrival, finally, of the Intellivoice **voice synthesis module.** Simply, that means the games can talk to you—not in the primeval, computer-generated garble of earlier days, but in clear male and female voices.

The module retails for $69. Three new games using it are already on line; a fourth will follow by the end of the year. **Space Spartans** is an intergalactic strategy game:

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score over 100,000 each time out. For sure success, follow the directions and diagrams:

Girders

(Note that a "G" designation is a spot on a girder. An "L" is a ladder.)

1. Run across G1 and climb L1.
2. Wait at point A and jump a barrel or two.
3. Climb L2.
4. If next barrel goes down L3, climb L4. If not, wait at point B.
5. If barrel goes down L4, go up L5, and vice versa.
6. Run down G4 to point C.
7. Jump a few barrels and wait for breathing room. When you get it, climb L6.
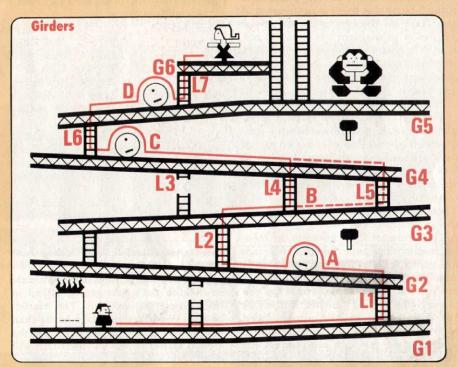8. Jump a barrel at Point D, then climb L7 to G6 and get the girl.

Rivets

The strategy here is simple. Go to the right side first or the fireball emerging from the left will kill you. Make sure you get a running start when you jump a fireball. That will not only help you go farther faster, but will also protect you from those fireballs that turn around underneath you. Then, try to get all the girl's belongings and, above all, don't fall through the gaps where the rivets were!
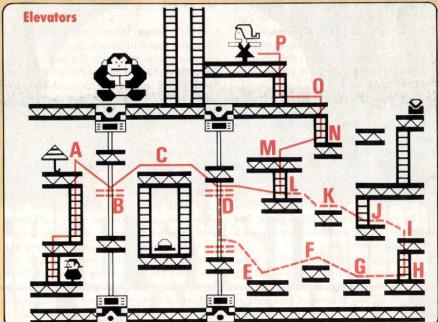
Elevators

1. Climb to point A and grab the umbrella.
2. When an elevator is at point B, jump on it.
3. If there's a fireball where the hat is, jump to point C.
4. If no fireball, jump back to A and return to direction #2.
5. Jump onto elevator at point D.
6. Walk onto point E.
7. Jump onto F, G and H in rapid succession.
8. Climb to I.
9. When fireball isn't near, jump to J.
10. Jump to K, then L.
11. Climb to M.
12. When the fireballs are near Donkey Kong, jump to N, climb to O and go to P.

When you've become more accomplished at running and jumping, here's a further shortcut to work into your plan. Replace directions 5 and 6 with these:

5. Jump onto elevator when there is just

Girders

Elevators

enough room for Mario to fit without hitting his head.

6. Quickly jump onto L. Now skip directions 8, 9 and 10 and go to 11.

And there you go. We've given you at least a 100,000 point head start. The rest is between you and the gorilla and the gorilla your dreams. —PAUL L. LEVY

A pleasant female voice tells you the computer is ready and at your command. Your moves on a game board thrust you into space battle. That's when a more urgent male voice tells you your space stations are being destroyed. We're still working on mastering this one.

In **B-17 Bomber,** those of you who missed The Big One can capture all the excitement of World War II on your TV screen. The setting is Europe, 1945. Your bomber is carrying a limited amount of fuel; you select the targets. The idea is to navigate from home base to your targets and back without being shot down or running out of gas. There are bombers to the left of you and voices to the right. "WATCH OUT FOR FLAK!" "BANDITS AT NINE O'CLOCK." It's a wonderfully complicated game, and you should get more than mere satisfaction if you beat it. You should get your pilot's license.

The third game is **Bomb Squad.** It's simple. Terrorists have planted and programmed a bomb that will blow up part of the world unless you can break a numerical code and defuse the bomb. All the while, voices are yelling more desperately. "THE CODE, THE CODE, FIGURE OUT THE CODE!" Those of you with mothers-in-law will find this game a piece of cake.

Then there are 13 additions to the regular Intellivision game lineup. There are fun games such as **Frog Bog** (which is to Atari's Frog Pond what K. C. Munchkin is to Pac-Man); **Royal Dealer,** which has you playing Hearts, Crazy Eights, Rummy or Gin Rummy against three poker-faced women; **Reversi,** based on the 19th Century strategy game, in which you play against the computer to imprison your opponent's markers; **Advanced Dungeons & Dragons,** a fantasy adventure game based on last year's real-life craze; **Lock 'N' Chase,** a cops and robbers game in which you attempt to pull off the biggest bank robbery ever without having the fuzz bust you. Fun for the whole family.

But the hottest titles in the Intellivision catalogue are the Tron games, based on the Disney film. In **Tron Maze-A-Tron,** you're trapped in the circuitry of a deadly alien computer (as opposed to a nondeadly alien computer). You have to disconnect the computer before it short-circuits you. In **Tron Deadly Discs,** quick thinking and fast action are needed to avoid deadly discs tossed by evil warriors. A third game, **Tron Solar Sailor,** is being worked on for use with the Intellivoice module.

And while you're battling on the screen, the video game companies are having somewhat more realistic battles somewhere south of San Francisco. In an effort to take some of the pressure off Atari's stranglehold on the software market, Mattel has developed something called the **M Network,** a line of cartridges for use on the Atari 2600 system. Eleven such cartridges, including one Tron title, will be out this year. Others include **Astroblast, Space Attack,**

Super Challenge Baseball, Super Challenge Football and **Lock 'N' Chase.**

The easiest comparisons in the battle are drawn from the sports games, a field in which Mattel has excelled. The Mattel-for-Atari games are certainly better than the old Atari games, but not as good as the original Mattel games. The real battle will be between the new Atari games and the Mattel-for-Atari games.

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Over at **Coleco** (What's this, a video game company based in Connecticut?!), it's simple to see why the stock jumped so high. **ColecoVision,** $160, is an impressive system in both sound and graphics, and it has a game lineup that runs from the red-hot home versions of **Donkey Kong** (see "How to Beat Donkey Kong"), **Turbo** and **Zaxxon** to fun and educational kid's stuff such as the ubiquitous **Smurfs.**

The biggest news, though, is that Coleco is about to come out with conversion modules. That means you'll be able to play your Atari games on Coleco Systems. (Intellivision games will be ready for Coleco soon.) Which raises a seemingly simple question: Instead of choosing among the formats, why not just buy the Coleco system with the conversion modules? With universal controls and graphic resolution that are up there with those of Intellivision and the Atari 2600, why not make Coleco the one-stop shopping machine? Aha! But what about the voice synthesis modules? And what about the 5200? To those of you who remember the early color TV wars, this might all sound familiar.

And to confuse you even more, Coleco is

working on a module that will expand ColecoVision into an impressive personal computer. That's something you'll already find on Astrocade.

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Astrocade is a company that has grown out of confusion. It has been known previously as Astrovision, which made Astro Professional Arcade, and even earlier as Bally, maker of Bally Professional Arcade.

Well, the name game seems to be over, and Astrocade is setting some high sights. In 1980, sales were $1,600,000. The figure went up to $10,000,000 in 1981. The 1982 projection is more than $100,000,000.

The Astrocade cartridge line will be led by a **Conan** (from the movie *Conan the Barbarian*) adventure game. There are also some impressive space games, such as **Astro Battle** (Astrocade's version of Space Invaders). Sports games, while plentiful, are not as impressive as they could be. While it's cute that football starts with the playing of the national anthem, and neat (if, annoying) that a large cheering section follows each hit in baseball, the games are more motion than meat.

Where Astrocade does excel is in its programs for a younger, more education-minded audience. With a small (calculator-size) built-in computer, and BASIC programming, Astrocade is a fine and reasonably priced ($299) learning tool. It has triggerlike, super-sensitive controls and perhaps the best sound around.

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The other major hardware manufacturer, **Odyssey,** continues to market games at a

line of inexpensive computer printers recently introduced the portable HX-20 ($700). This little beauty comes equipped with full-sized keyboard, built-in 4-line by 20-character LCD display and dot matrix printer. A modem will be available in the near future.

Heath H-89 and Zenith Z-89. These are black-and-white or green-on-green machines with built-in screens, plenty of memory and the ability to use a wide variety of existing programs, especially since CP/M is available as an option. You can build the Heathkit version ($1895) yourself or buy a factory-built Zenith ($2895); the kit takes time, but Heath's instructions are renowned for clarity.

IBM Personal Computer. This is the new kid on the block, but from the best of families. It has plenty of memory capacity built in (up to 256K), with a wide variety of programs now available. Software companies are falling all over themselves adapting their programs to the IBM. It can run CP/M 86 programs or be adapted to run standard CP/M programs. Prices start at about $1565, including a color/graphics adapter, but not a display screen.

Osborne 1. The first full-featured portable computer, it weighs 24 pounds and includes disc drives, a 5¼" screen and five software packages, including the popular WordStar, a word-processing program, and the Supercalc electronic spreadsheet. It's strictly green-on-green, and it costs $1795.

Radio Shack TRS-80 Models II, III, Color and Pocket Computers. For the low-priced ($400) TRS-80 Color Computer, programs and peripheral equipment have begun to arrive in force; a TV set is required for display.

The Model III ($699 to $2295), by comparison, can use many of the thousands of programs written for the earlier Model I, plus thousands more designed specifically for the III; it's a black-and-white computer with built-in screen. Adapters for CP/M are now available from other manufacturers.

The Model II ($3499) is more business-oriented than the Model III, and runs twice as fast. It has a built-in disc drive and more memory. CP/M is available for it too, from other manufacturers.

The Pocket Computer TRS-80 Model PC-2 ($280) is 7-11/16" x 3⅜" x 1-1/16", which makes it portable, but limited. Not many programs are available, and programs must be small because of memory and file-keeping limitations, although memory expansion is possible. Sharp also builds this model, so it's also available under that name as the Sharp PC-1500.

Sinclair ZX81. Small (6½" x 5" x 1") but not portable—you have to plug it into power and a TV set—the ZX81 is very inexpensive ($100 wired, $80 as a kit) and therefore popular (about half a million sold worldwide); programs exist but may be hard to find. It's black-and-white and there's not much of a keyboard, but it's hard to beat the price.

Timex Sinclair 1000. Basically an enhanced version of the ZX81, it is also selling for $100. Use your black-and-white TV for a display screen. Modems, printers and memory expansion modules are also available.

Thumbnail Views of Popular Computers

Apple II Plus. One of the most popular and versatile computers, the Apple II Plus offers color graphics, room for additional circuit boards (for extra memory or various specialized purposes, including boards that let the Apple run CP/M programs) and probably more software than is available for any other home computer, including plenty of game and business programs. Prices start at about $1530, not including a TV monitor screen, an adapter for use with a TV receiver or a disc drive.

Atari 400, 800. These computers have excellent graphics and sound, and many of the best game programs, though other programs are also available. The 400 (with a membrane instead of a typewriter keyboard) is very low-priced for its capabilities (under $300), but the 800 (about $900) has a better keyboard and can be expanded to do more.

Commodore VIC 20 and Commodore 64. The VIC 20 ($300) is the lowest-priced color computer—for now—and uses any TV set as its display. While it's a real home computer and will run a variety of useful programs, plug-in game cartridges give it the added dimension of arcadelike fun. Commodore's newest home computer, the Model 64, is twice as expensive as the VIC 20, but at $600 it's still the lowest-priced machine in its memory class; the "64" in its name refers to the amount of random-access memory it contains—64,000 bytes. The Commodore 64 will run a wide assortment of Commodore programs and, with the addition of an add-on processor card, will accept CP/M programs.

DEC Rainbow 100. Digital Equipment Corporation, one of the most prestigious American computer manufacturers, is now offering a handsome and remarkably talented personal computer called, nicely enough, the Rainbow 100 ($3495). Like the IBM Personal Computer, the Rainbow 100 has a separate keyboard joined to the "system unit" by a flexible cord. The Rainbow 100 comes equipped with keyboard, two disc drives built into the system unit and a black-and-white monitor. An especially winning feature of the new machine is its ability to run both "standard" CP/M 80 programs and the newer CP/M 86 programs.

Epson HX-20. The maker of the most popular

and interpret your solar natal chart. You provide your birth date and birth location; latitudes and longitudes of major cities are included in the program. ($23 for the Atari 800. Manufacturer: Atari, Home Computer Division, P.O. Box 50047, San Jose, California 95150. 800-538-8543.)

Hypnosis. The manufacturer describes this program as "an aid to suggestive relax-ation, behavior modification and trance induction." It uses photo-optic and acoustic stimulation to induce hypnotic states. ($20 for the Apple II and III. Manufacturer: Andent, 1000 North Ave., Waukegan, Illinois 60085. 312-244-0292.)

Interlude. If you're a little timid about suggesting new sex scenes to your lover or just short on imagination, Interlude might be just the thing to start the ball rolling. You and your lover respond to a series of multiple-choice questions and answers that Interlude poses on the display screen. From how aggressive you feel to a detailed assessment of your favorite erogenous zones, your responses are used to compute an Interlude number, which in turn leads you to the appropriate sex scene described

slow but steady pace. There's a new version of K.C. Munchkin just out. It's called **K.C.'s Krazy Chase,** and this time it's chasing a "Dratapiller" instead of Pac-Man. New adventure games such as **Freedom Fighters** (in which you dodge debris to zap enemy warships), and **Pick Axe Pete** (where an intrepid miner hammers at tumbling nuggets of gold) are overshadowed by the nearly monumental **The Great Wall Street Fortune Hunt.** That's a game played partially on the machine and partially on a complicated game board. You start with $100,000. Taking things such as the prime rate into account, you decide whether to invest in stocks, bonds, gold, T-bills, real estate or other options. As the ticker and news flashes move left to right, you move to manipulate your fortunes.

But the big money at Odyssey is on the future. There will be a **sound module** coming this year. And, suddenly, in summer, Odyssey² will become **Odyssey³,** a game with much-improved graphics. And just so current Odyssey owners aren't caught by the old switcheroo, there'll be an adapter that will allow current cartridges to play on the new unit.

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Activision, a company that has no hardware worries (it makes none), continues to lead the league in creative games. The latest crop includes **Pitfall!,** in which you control a Tarzanlike character in search of hidden treasure. The game has 256 screens

Why Pac-Man is called Pac-Man

Way back in 1980, the folks at Japan's Namco Ltd. decided to develop a comical game to give video nuts a rest from space battles. They decided to build a game around eating instead of shooting. In Japan, *puck* is the sound you make when you eat something good. So "Puck-Man" was invented. Soon after, Midway, the American arcade company, contacted Namco when it learned of the great success of Puck-Man. Midway was impressed with everything but the name.

"They didn't like how it rhymed with your very popular expletive," says Hideyuki Nakajima, president of Namco's American division, "so we changed Puck to Pac."

and a 20-minute time limit. Your job is to swing the little man (there are lots of hanging vines) over tar pits, blazing fires and crocodile-infested swamps.

MegaMania is a surrealistic action game. Instead of being invaded by the usual space aliens, you get showered with video hamburgers, radial tires, bow ties and Swiss cheese. MegaMania joins games like **Stampede** and **Chopper Command** in the growing Activision tradition of bizarre, well

thought out fun.

And now, those of you with Intellivision units won't be left out. As you read this, Activision is shipping its first Intellivision-compatible cartridges.

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Bizarre fun is also the theme of one of **Apollo**'s current games. In **Lost Luggage,** you fight the nightmare of every airport. The baggage carousel has gone berserk. It's your job to catch all the falling Samsonite. You drop one and they all open up, revealing everything from bras and panties to what look like dead bodies but are really one-piece long underwear. There's even a version in which a bomb has been planted in one of the satchels. Fans of Activision's **Kaboom!** will find this game familiar.

Apollo is also readying Intellivision-compatible games, as is **Imagic,** which is adding Atari-compatible games such as **Riddle of the Sphinx,** an almost endless treasure hunt, to its collection of other games, including **Atlantis, Demon Attack,** and **Swords and Serpents.** Our favorite is still **Trick Shot,** a game that's graphically and strategically faithful to some of the best pool hall hustles.

There are other new names on line. **Spectravision** has such offerings as **Gangster Alley,** in which you try to keep the mob off your turf; and **China Syndrome,** in which you try to make the world safe for Jane Fonda. **Tigervision** just came out with five titles, including **Jawbreaker,** where you try to eat up all the candy in a candy factory and brush your teeth before the gremlins get you, and **King Kong,** a brand-name version of Donkey Kong. And **Arcadia** is playing with titles like **Suicide Mission** and **Communist Mutants from Space,** a game that involves a time warp, if not a mind warp.

To confuse maters further, **Emerson Radio** is now out with a 20-cartridge system called **Arcadia 2001,** which has nothing to do with the other Arcadia.

More traditional game companies such as **Parker Brothers** are also entering the video market. Their first effort, an impressive interpretation of **Star Wars: The Empire Strikes Back,** was followed by **Frogger,** a play on Activision's Freeway; then by a series of cartoon and movie follow-ups. On the 1983 drawing board are **Spiderman, James Bond: 007, The Incredible Hulk, Star Wars** and **Star Wars: Revenge of the Jedi.**

CBS Video Games, a brand of **Gabriel Industries,** has plans for two Atari- and Intellivision-compatible cartridges based on Bally arcade games: **Gorf** and **Wizard of Wor.** They will be out by Christmas.

And who will win the real battle—the war over the video game big bucks? There's only one sure prediction: With the business moving so frantically, with each company playing hard at "Can you top this?" it's difficult to imagine that anyone will sit back fat and happy. That means many more innovations and perfections—and, with luck, a lot less confusion.

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DISCOVERIES

A potpourri of great new finds.

TABLE IT. The Radio, from Proton, boasts a Schotz FM tuner and two amplifiers—a hefty 20-watt amp for the bass and another 5-watt circuit for high frequencies. What's more, The Radio is expandable; you can add a Powered Speaker (with two amplifiers of its own) for stereo. In fact, up to ten pairs of Powered Speakers can be wired in for stereo in ten different rooms. Or hook them all up in the same room for a thunderous 500 watts of power. The Radio ($280) and The Powered Speaker ($150) are available at stereo shops; or contact Proton, 1431 Ocean Ave., Santa Monica, Calif. 90401.

DOUBLE PLAYER. The Sony WM-D6 Walkman Professional pulls its weight at two positions. With Sony's MDR-50L headphones, it's an advanced personal portable, offering Dolby B noise reduction, and quartz-locked speed control. And it's also one of the smallest home cassette recorders ever made. Only 6¾" x 3¾" x 1½" and just 1¼ pounds with batteries, it'll cost you $350 from Sony dealers.
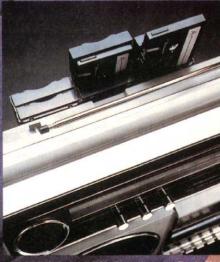
THE LIGHT FANTASTIC. A two-color fluorescent display highlights Akai's new AA-R42 receiver. The lighted screen indicates all functions at a glance, which is very useful, since the receiver has a stylishly flat front panel and hordes of electronic switches, and controls but no knobs or slides. The AA-R42 pumps out 60 watts RMS of power per channel and costs $430. Contact your local stereo store or Akai America, P.O. Box 6010, Compton, Calif. 90224.

PHOTOGRAPHED BY MARCO GLAVIANO AND TOHRU NAKAMURA
HAIR AND MAKEUP, RALPH CASTELLI.

STICK UP. With Le Stick from Datasoft, you've got the whole game in your hand. Le Stick is a free-floating, aircraft-style video game hand controller that uses "incline switches" to control events on the screen. The thumb-operated fire button is on top, and there's even a squeeze-operated "freeze" switch for those times when the excitement gets too intense. Perfect for flying ace games and awesome on Missile Command, Le Stick fits the Atari VCS, 400 and 800, the Commodore VIC 20 and the TRS-80 Color Computer. $40 at video game and computer stores; or contact Datasoft at 19519 Business Center Dr., Northridge, Calif. 91324.

CASSETTE CADDY. Shape's new Back Pack Cassette Storage Units allow your player to carry your cassettes for you. These interlocking cassette boxes attach directly to your player and hold up to six tapes; you can add as many units as you want. And the cassettes pop out easily. $6 from your local audio/video store or from SMI, Box 738, York Harbor, Maine 03911.

EAR-REPLACEABLE. The headphones supplied with many personal portables often take up more room than the units themselves. These tiny KH-M5 Stereo Micro Headphones from Kenwood fit inside your ears while you're listening through them and inside a standard cassette box when you're not. They weigh only five grams (without the cord) yet sound terrific, because all the music goes directly into your ears. Complete with mini- and standard-size connectors, they cost $25 at audio stores; or contact Kenwood, 1315 E. Watsoncenter Rd., Carson, Calif. 90745.

LOOK MA, NO HANDS. Now you can receive telephone calls without running into the other room. Technidyne's Hands Free Go Fone ($150) is cordless and operates up to 100 feet away from its base station; instead of holding it, you wear it. When the phone rings, you merely push a button on the portable receiver clipped to your belt and start talking while you keep on keeping on. The headset is light and comfortable and the portable receiver plugs into the base station for recharging. Contact Technidyne at 8550 Katy Freeway, Houston, Tex. 77024.

IT AIN'T HEAVY, IT'S MY BROTHER. Weighing in at only five pounds and measuring just 12½" x 1¾" x 8¾", the new EP-20 mini electronic typewriter from Brother International incorporates heavy-weight features into a lightweight package. An 88-character keyboard and 16-character visual preview display coupled with its automatic correction system make it easy to use. The EP-20 will become available around January 1983 for $200. For more information, contact Brother International, 8 Corporate Place, Piscataway, N.J. 08854.