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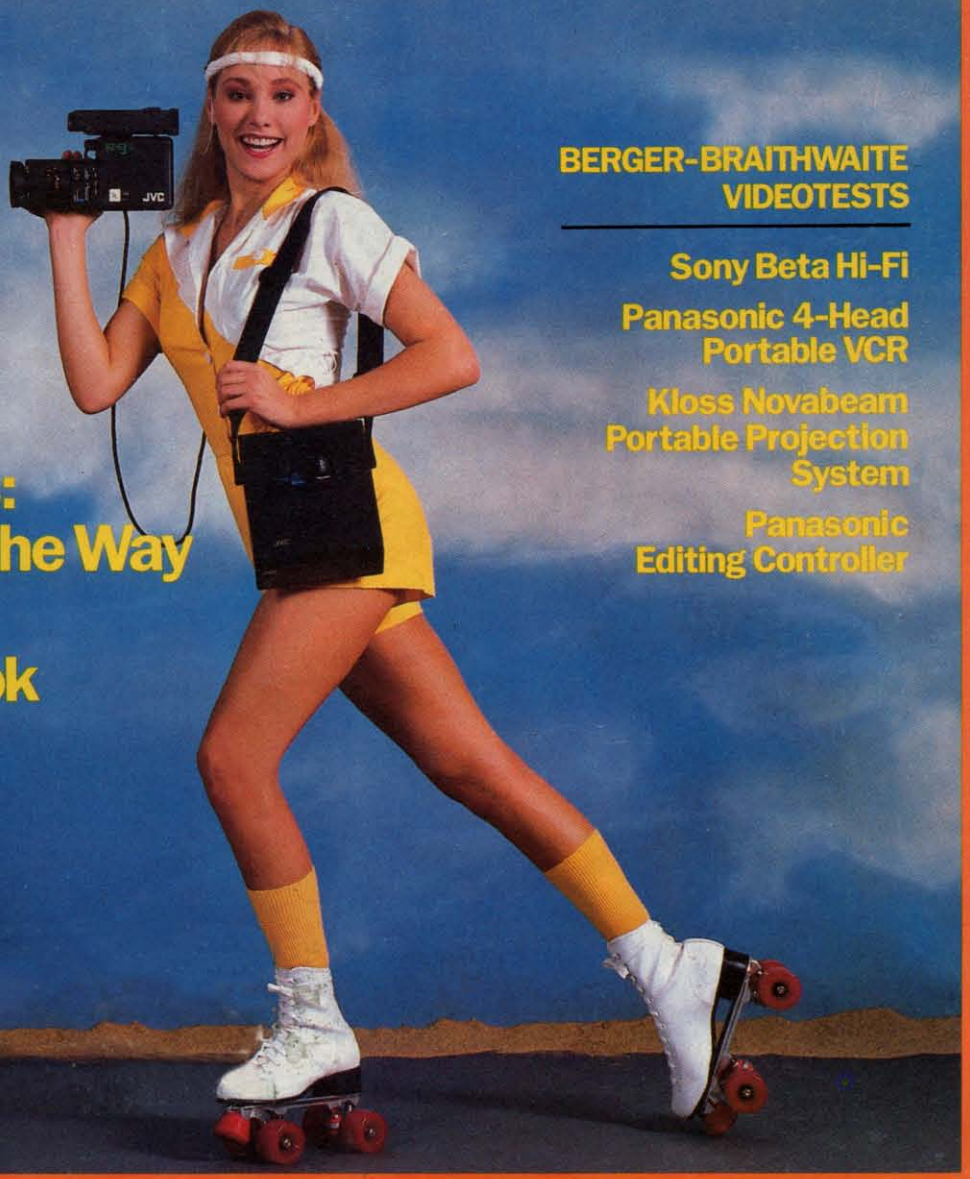
SMALL WONDERS
Our Annual Guide to New Portable VCRs



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George Burns: Laughing All the Way

The VIDEO Book of Records

BERGER-BRAITHWAITE VIDEOTESTS

Sony Beta Hi-Fi

Panasonic 4-Head Portable VCR

Kloss Novabeam Portable Projection System

Panasonic Editing Controller

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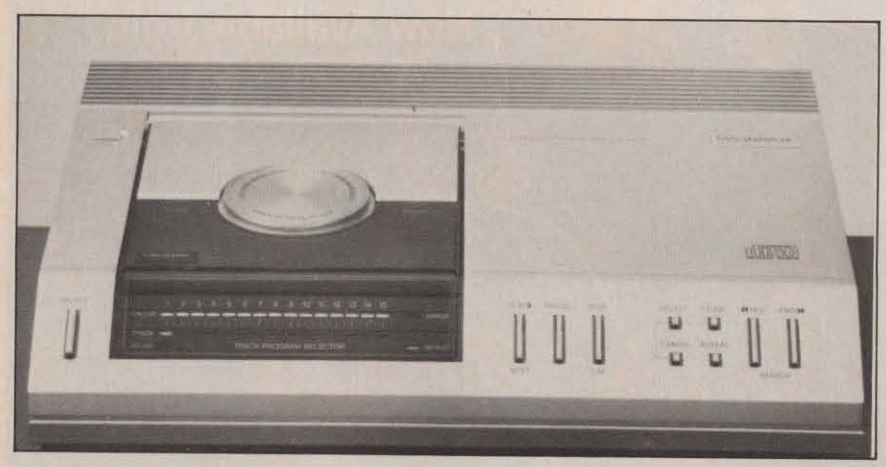
New Products



Audio's Compact Disc: Call It 'Baby LaserDisc'

"Baby LaserDisc" is one possible nickname for the Compact Disc (CD) system, as epitomized by the Magnavox FD1000 player, though high-quality audio—*not* video and audio—is what it produces. Philips of the Netherlands created both the CD audio disc and LV videodisc systems, applying LV function and design ideas to the new CD system, which is expected to replace conventional turntables in audio systems and audio/video systems within as little as 10 years.

Like LV, CD uses a digitally encoded disc, this one seven inches, with signal information stored in pits on a foil sheet sandwiched between two clear plastic layers. The wear-free disc is immune to the ills of conventional records: poor-quality recycled vinyl, clicks, pops, scratches, improper tracking due to warping, skipping, and the static caused by chemical polyvinyl deposits in hastily pressed discs. This theoretically insures a perfectly reproduced signal, though not necessarily a fully digital one unless the musical/other program sources (master tapes) had been digitally recorded. Thus there will never be a completely digital version of Sinatra's *Songs for Swinging Lovers* or the Beatles' *Sergeant Pepper's Lonely Hearts Club Band* or Wilhelm Furtwangler conducting Beethoven's Fifth.

The front panel contains Play/Next (go to next track), Pause, Stop, and separate buttons for Rev and Fwd Search. Repeat replays a selection just played. Pressing Select and Store allows the user to pick up to 15 tracks from a disc for selective playing. Pressing Select and Cancel allows the user to choose tracks to be omitted from play. Displays include 15 LEDs apiece for Progr (Program) and Track, and one apiece for Error, Repeat, and Pause.

Several signal-processing circuits complete the player. Special modulation (EFM) and error correction (CIRC) systems suppress the effects of any marks or scratches on the disc that might interfere with the laser's performance. Because even digitally recorded and reproduced signals must eventually be converted to an analog waveform to be interpreted by your loudspeakers, all CD players must use a digital-to-analog conversion filter. Magnavox's is a 16-bit unit with digital oversampling filter, noise shaper, D/A chip, and simple analog filter. Variations among such conversion filters may account for differing performance among CD players of different brands.

The FD1000 connects to any component video or audio system through any line input such as CD/TV, Aux, Tape, or Tuner. It measures 3 inches high by 12-1/2 wide by 10-1/2 deep.

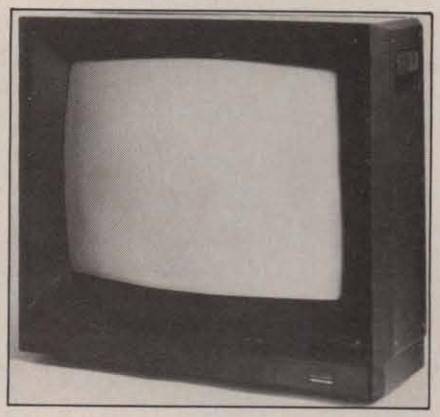
Price: $800.

To receive further manufacturer's information, circle No. 114 on the Reader Service Card.

Proton Has 25-Incher To Match Super 19

In our March issue, Berger-Braithwaite Labs called Proton's 600M 19-inch color monitor "the *best* we've tested." Proton now has a 25-incher, the 602M.

Like the 600M, the 602M provides clear, detailed images with geometric distortion of less than 0.7 percent. Low overscan of typically five percent provides up to 15 percent more of the picture available in the signal. Full DC restoration with Keyed Back Porch Clamping provides blacker blacks, whiter whites, and clear, bright colors. Picture resolution is 370 lines.



The unit also features a high-performance comb filter, precise deflection yoke, automatic shutdown, separate audio and video inputs, video output, and 10-watt stereo audio amplifier.

Price: $1050.

To receive further manufacturer's information, circle No. 115 on the Reader Service Card.

AMIGA Power Module Beefs Up Atari VCS

AMIGA's Power Module is a memory-expansion module that brings more sophisticated games and graphics to the Atari 2600 Video Computer System (VCS).

Conventional video-game cartridges consist of a case, circuit board, and game program stored on read-only memory (ROM) chips. The Power Module provides the case and circuit board plus a separate microprocessor networked with the one on the VCS. The user can then buy games on Power-Play audio cassettes for far less than the price of a game cartridge.

The Power Module's increased graphics capability stems from its Random Access Memory (RAM) capacity of six Kbytes, as opposed to the typical game cartridge's two to four Kbytes of ROM. The Module prompts each step in its loading procedure (which takes 15 to 30 seconds) by displaying simple instructions on the screen. The unit also offers interactive game playing via telephone: when two Power Modules are interfaced using individual modems

New Products

(available separately), two players can square off while the modems handle transfer of information between VCS units.

Two Power-Play tapes are included with the basic unit. "3-D Ghost Attack" is the first 3-D video game (glasses included). "Depth Charge" is the first machine-interactive (for two players) vidgame.

Price: Power Module, $44.95; additional Power-Play game cassettes, $9.95.

To receive further manufacturer's information, circle No. 116 on the Reader Service Card.

SL-5101 Is Sony's First Cable-Ready Betamax

The midpriced SL-5101 is the first cable-ready Sony Betamax VCR. The 105-channel unit can record unscrambled programs via direct cable hookup

without need for a converter box and record one unscrambled channel while displaying another. Fourteen-pushbutton Express Tuning selects from channels on VHF (2-13), UHF (14-83), cable midband (A-I), and superband (J-W) in any sequence.

Other features include seven-day/one-event programmability, BetaScan high-speed picture search, and a PCM switch for high-quality Pulse Code Modulation audio recording with the optional Sony PCM-F1 Digital Audio Processor.

Price: $669.95.

To receive further manufacturer's information, circle No. 117 on the Reader Service Card.

Video Soundtracker I Is 3-in-1 Enhancer

In one low-priced box, Audio Control's Video Soundtracker I offers a five-band audio equalizer, noise reducer, and stereo synthesizer. All three functions are useful for video soundtracks, which are still mainly of mediocre fidelity except for the Beta Hi-Fi videocassette and LV videodisc.

The equalizer provides five dials with cutoff points at 60 and 250 Hz, and 1, 3.5, and 10 kHz. Most audio equalizers provide five bands for each channel, but this unit is designed for use with low-fidelity mono tapes; fussy audio/videophiles may require another, more

sophisticated unit. The noise reducer is a one-chip dial that cuts high-frequency hiss at whatever volume level is selected. In/out switches are provided for both noise reduction and stereo synthesis.

Price: $149.

To receive further manufacturer's information, circle No. 118 on the Reader Service Card.

Memorex VHS Tapes Use Permapass Binder

The new line of VHS videocassettes from Memorex all come with the Permapass binder system, which permanently binds oxide particles to the tape to provide an exceptionally smooth surface that reduces head wear to a level five times lower than industry specifications, according to the manufacturer.

Memorex High Grade is the company's top of the line; the tape uses Super Accuform magnetic oxide particles and comes in a V-100 "professional storage case." Pro Series tapes deliver dropout performance 50 percent better than industry specs, according to

the maker, and also come in V-100 cases. Memorex's "improved standard" cassettes come in a high-density paperboard sleeve.

Memorex also makes a complete line of Beta cassettes, a VHS cleaning cassette, and the LV-100 storage case as a separate accessory.

Prices: High Grade T-120, $29.99; Pro Series T-120, $21.99; improved standard T-120, $18.99; V-100 case without tape, $1.99.

To receive further manufacturer's information, circle No. 119 on the Reader Service Card.

Quasar 5-Inch Is 1 of 3 'Toteables'

The XP1467 five-inch black-and-white portable TV with AM/FM radio is one of three new "Toteables" from Quasar. The others are the XP1468 (with added D-cell battery compartment) and XP1465 (without the radio or compartment).

All the units feature solid-state construction, tinted sun shield, and varactor tuning. All can run on AC, Quasar's optional rechargeable battery, six D-cells using an optional battery pack (unnecessary with the 1468), or a 12-volt car battery using the auto power cord included.

Prices: XP1467, $134.95; XP1468, $149.95; XP1465, $114.95.

To receive further manufacturer's information, circle No. 120 on the Reader Service Card.

Videogram

News & Information from the World of Video

by Pat Wadsley

And Now, Monty vs. Hal

"Scrabble" aficionados running short of worthy opponents should meet Monty. Monty has a 39,000-word vocabulary when using all his brain power. Those other rubes you've been playing with probably only have seven or eight thousand words in their writing vocabularies—and one or two thousand when they speak.

Part of the reason Monty's so wordy is that he's not a regular guy. "Monty Play Scrabble" is the new electronic version of the gaming world's most popular trademarked word game. He comes in two versions: a floppy disk for Apple computers and a hand-held console.

Monty does not play 'Spin the Bottle.'

The floppy disk lights up your CRT or TV with the familiar "Scrabble" board, including triple-word squares and double-letter squares, and you can play at four skill levels (which means that once in awhile you can beat Monty). The hand-held console is used with the cardboard "Scrabble" board of old. Again, you play against Monty. Monty has a memory of 13,000 words built right in plus two additional modules containing 13,000 words each.

The Scrabble company would like to do only board games, but according to John Nason, head of marketing for parent company Selchow and Richter, "You can't ignore video games. They're not going to go away." Prices for "Monty Play Scrabble" are $40 to $50 for the floppy disk and $120 for the console.

Electronic sadomasochism comes to the home. 'Oh no! He's gonna beep mean to me!'

Sound Sans Pictures

The new Sony Beta Hi-Fi stereo VCR is supposed to be so good. How good? One Florida-based audio recording company is banking on music lovers throwing away their old audio equipment in favor of it. Nautilus Entertainment, an audiophile firm, is releasing the first audio-only videocassettes, to be played on the new Beta Hi-Fi VCRs.

That means that you can buy one of the first Nautilus releases, like *Wolftracks* by Steppenwolf, bring it home, put it on your Beta Hi-Fi VCR, and not see any pictures to distract you from the sound! Isn't that progress? Nautilus will also have classical releases. Won't it be great listening to Mozart with no pictures too?

But seriously, folks—Nautilus President Steve Krauss feels the new Sony system has better sound than any other VCR, citing its 80-dB dynamic range. Dynamic range is the difference between the loudest and lowest noise a

Save Mr. Bill!

How many times have you stood helplessly by and seen *Saturday Night Live*'s poor little Mr. Bill smashed, squeezed, pulled apart, and beaten into a lifeless pulp of Playdoh by that awful sadistic Mr. Sluggo?

Now you can help Mr. Bill—meet his mom, his dog, Mr. Hands, Miss Sally—and you can stick it to Sluggo. Data Age, the people who brought you the first rock-&-roll vidgame with "Journey," present "Mr. Bill's Neighborhood," which revolves around getting Mr. Bill through streets and alleys and away from Sluggo and Mr. Hands. "Mr. Bill's Neighborhood" will be voice-synthesized, so if you don't succeed in saving Mr. Bill in time, you'll hear his pathetic little cry—"OH, NO!"—just like on TV.

There's no price announced yet, but Mr. Bill should come out on Atari-VCS cartridge right around now, and on Colecovision and Intellivision pretty soon.

machine can reproduce. Digital Compact Disc players have a dynamic range of up to 95dB. Regular turntables have only 60-65dB.

The price of the Hi-Fi tapes will be $15 to $20, the tapes will be disk-length as opposed to standard videocassette length—and if you do decide to go to audio-only video, as opposed to audio and video, at least you won't have to step over as many wires. Panasonic has demonstrated a system offering similar high performance, but has yet to announce marketing plans.

Disc Brakes

Finally: a way to get the scenery to change as you pedal away on your exercycle.

Neiman Marcus, the Texas department store whose catalog features such out-of-this-world items as diamond-encrusted 10-gallon hats and private Lear jets, now offers a product

For $20G, avoid the great outdoors.

we'll all want for every room in the house. For a mere $20,000 Neiman is selling a LaserDisc player-exercycle.

The gizmo features a 45-inch screen that provides moving scenery as you pedal. You can bike ride down a shady lane. You can pedal through Southern California canyons. You can cruise around stars' homes in Beverly Hills, or race up and down West Coast bikeways.

The machine's computer connects your footwork to the action on the screen. So if you pedal faster, the action on the screen moves more quickly. If you go uphill, you must pedal harder. Don't worry: If you come to a fork in the road, you can always push a button that will make the decision for you.

The disc player can also accommodate regular LaserDiscs so you can also watch movies as you pedal.

Goodbye, Captain Hook

Bad news for all you pirates who've been blithely stealing HBO programs with your cute little home satellite dishes. After taking a number of alleged pirates to court for unlawful theft of signals, HBO has come up with a more efficient way to stop nonsubscribers from seeing all those classics like *Vice Squad* and *Gallipoli* 567 times in one month. HBO will be the first pay service to use the M/A Com Linkabit scrambling and descrambling unit, a coded device HBO says even the most diligent MIT student or Apple II user can't foil.

Up to now, signals have been blocked at the "receiver end" (the decoder box) by individual cable systems so that nonsubscribers can't receive pay channels. But up in the air, signals are prey to any satellite. HBO and M/A Com Linkabit are the first to scramble from the "head end" (at the satellite), thereby garbling audio and video.

The good news is that the unit will enable HBO subscribers to receive programming in stereo via an FM hookup to their audio receivers.

Imagine *Vice Squad* in stereo.

People for Laurel & Hardy

Was it sabotage? Was it treachery? Was it a right-wing plot?

It was none of the above, but it did provide a chuckle. A few months ago, People for the American Way—the nonprofit liberal organization founded by Norman Lear and other defenders of the First Amendment—bought time on 30 stations across the country for a half-hour documentary hosted by Burt Lancaster, *Life and Liberty for All Who Believe.*

Life and Liberty featured Moral Majority members talking about their religious principles. Dean Wycoff, for instance, said homosexuality is comparable to murder and that homosexuals should be executed. Baily Smith mentioned that "God does not hear the prayer of the Jew." Also featured were Jerry Falwell and televangelists Pat Robertson and Jim Robison. The idea was to let the M.M. speakers dig their own graves by illustrating a connection between fundamentalism and the radical right.

However, when the show was to air in New York, WNEW mysteriously started airing a program by televangelist Oral Roberts. Viewers started calling in furiously; when WNEW realized what happened, it quickly substituted a Laurel and Hardy movie.

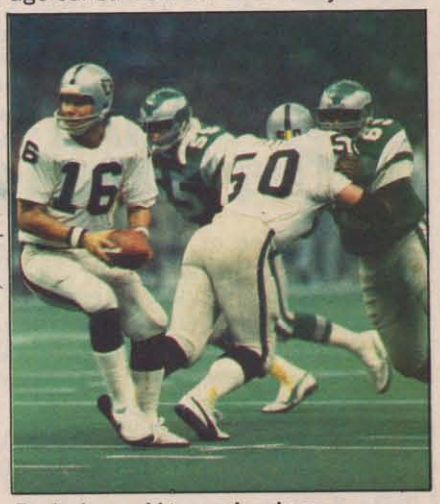
WNEW and People for the American Way agreed it was a mistake, and *Life and Liberty for All Who Believe* was aired in its entirety a month later.

Vidbits

Who could forget Bogie and Bergman in *Casablanca*? Aw, play it again, Sam. Well, Sam will be playing it again, and again and again and again when the weekly *Casablanca* series makes its debut this spring. Producer David Wolper, who also did *Roots*, says the show will be photographed in muted colors and use many pieces from the original sets. Who will they get to take the place of Bogie?—David Soul.

Other spinoffs from "classics" are offered by Private Screenings, an adult-movie service competing with the Playboy Channel. Private Screenings recently aired a movie produced in California called *Hey, There's Naked Bodies on My TV Set.* The movie was shot in three segments and is a hard-R parody of hit TV series. One is *Bernie Milner*, in which cops arrest ladies of the evening and become more than professionally involved. Another is *Happy Daze*, where the macho star The Bonz fixes up his less-worldly pals with sweet young things. Yet another other is *Don't Come Back Kotler*, in which Kotler finds himself teaching a sex-education class. What can I say?—they're funny.

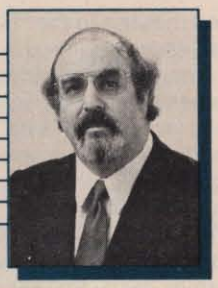
But I'm sure most of you would rather play football, and now you can go down to the arcade and play real NFL football on a LaserDisc video game. NFL footage culled from the NFL library is used



For jocks, a vidgame slamdance.

to set up any of 200 plays. You can play against a partner or against one of the teams and the winner is determined by yardage gained and points scored. The first two teams to compete will be the San Diego Chargers against the L.A. Raiders. Future vid teams will include the Dallas Cowboys vs. the Washington Redskins and the New York Jets vs. the Miami Dolphins.

Computer Ease



The Human Interface

by Ivan Berger

The Keyboard: Where You Contact the Computer

Typewriter-style keyboards with discrete keys, as on this Viewpoint, are best.

If you really start enjoying your computer, or if you're using it in business, the odds are that you'll spend long hours at it. So the keyboard you use will have a lot to do both with how comfortable you'll feel with what you're doing, and how well and easily you'll do it. Keyboards differ in their feel, how flexibly you can place them, and in the layout, number, and functions of their keys.

Taking the last point first, you'll find computer keyboards have a number of keys you won't find on the typewriter (and lack a few, such as margin-set keys). Since computers are often used for numerical problems, many have numerical keypads, arranged in a square like calculator keys to the right of the main keyboard. There usually will also be arrow keys and keys with such labels as BREAK, CLEAR, CTL, and sometimes ESC and RESET.

The arrow keys move the cursor—the spot that shows where the computer's attention is focused on the screen. BREAK is used to interrupt some programs so you can regain control of the computer. (When a computer is running a program, it's under the program's control—not yours—unless the program is written to allow for your input.) CLEAR usually clears the screen.

CTL stands for "control." The control key is like an extra shift key. Just as pressing the shift key and a number key produces a new character (such as shift-4 for "$" on my computer and typewriter keyboards), pressing the control key with another key gives the latter a new meaning too. For example, control-G is a "bel" code that will ring a bell or beep a buzzer on printers and other devices so equipped. Control-H is usually a backspace, while others may be used differently by different programs.

ESC stands for "escape." It's commonly used to escape from one mode of operation into another. For example, it's often invoked to tell printers and other devices that the next character or characters are not text to be printed but commands to be obeyed. Escape P, for example, tells my printer to shift into italic mode; with the ESC code as prefix, it would just print the letter P.

The RESET key or switch interrupts everything and starts the computer up again from scratch (or thereabouts). This not only interrupts the program but often loses it irretrievably in memory. It's best if this is not on the keyboard at all, so you won't press it accidentally (ask an Apple owner about that). Some computers such as the Radio Shack Color Computer tuck it away in the back where it's too inconvenient for many users. On my TRS-80 Model III, it's in a far corner of the keyboard, recessed about ⅜ of an inch and colored red—a good mixture of convenience and safety. I've also covered it with a cardboard flap so my cats won't accidentally step on it.

Many keyboards also have keys for functions specific to that computer or terminal. Some directly use special capabilities of that machine; their keytop legends tell you what they do, or at least hint at it. Others are multipurpose function keys usually labeled something like F1 or F2; these are "user definable," which means their meaning depends on the program. The F1 key might mean "delete sentence" when you're running a word-processing program or "fire phasers" when you're running a game (though game programs rarely use these keys). Other programs, not written to use these keys, ignore them. On many computers these function keys make up the top line of the keyboard so that the program can explain what each key then does on the bottom line of the screen, just above each key.

How flexibly you can place your keyboard basically depends on whether or not it's detachable. If it is, you can set and angle the keyboard and screen where each is most comfortable for you—even putting the keyboard in your lap if that suits you. If the keyboard's not adjustable, you have to put up with whatever relationship of screen and keyboard is built into the machine. This may be comfortable for some but not for others, or not as comfortable for you as it might be if you make your own adjustments. Many users prefer keyboards with low-slung housings (such as the IBM PC). In Europe such housings are mandated by human-engineering regulations.

Keyboard feel starts with the physical nature of the keys themselves. On low-cost computers such as the black-and-

The Atari 400 uses a membrane keyboard —a type fast typists and heavy computer users should avoid.

white Sinclair/Timex machines and Atari 400 the keyboard is a flat membrane whose "keys" are simply printed on it. They work, but they don't tell your fingers when you've pressed a key though some might beep when keys are pressed. It's also hard to tell *which* key you've pressed without looking. This bothers touch-typists more than hunt-and-peck typists, who look at their keyboards anyway. But if you spend much time at the computer, it pays to learn touch-typing and get a better keyboard. Improved keyboards are available for at least the Sinclair and Atari, from outside manufacturers.

Slightly more expensive models, such as the Radio Shack Color Computer, and the Sinclair/Timex 2000 have flat-topped discrete keys about the size and shape of Chiclets. The difference from flat membrane keyboards is substantial: you can feel the keys depressing and hear soft switch clicks, both clues that tell you what your fingers are doing. The keys are usually a slightly rubbery plastic—an attempt to keep your fingers from slipping on their almost-flat tops.

At the top of the line are more substantial discrete keys like a typewriter's, with cupped tops to cradle your fingertips. This cupping not only helps keep your fingers from slipping but also helps you center them above the keys to reduce errors. This is important, for typing errors are more troublesome when you're communicating with computers. Humans can understand from context that you probably meant PRINT when you typed PRING (a typo that plagues me, I must confess); computers aren't that accommodating (yet).

Computer keys, unlike those of all but the new electronic typewriters, are switches. The feel and reliability of the key thus depend on the kind of switch. On the old TRS-80 Model I, the key switches make and break connections physically the way most room-light switches do. These keys have a spongy feel, and their make-and-break action can be interrupted by dust, hair, or fur working their way into the keys. More modern computers such as the Model III use switches that sense key closure electronically. These keys are more reliable and have a lighter, crisper feel.

Play with some keyboards when you shop for a computer and you'll find such differences in keyboard feel fairly common. Don't underestimate their importance: you may wind up spending hours on whatever keyboard you select. Other human factors worth noting include height above the desktop and keyboard slope—some keyboards are set so that their tops curve down in an arc (which I prefer) instead of on a linear slope.

If you'll split your time between typewriter and computer, look for a computer whose keyboard matches your typewriter's as closely as possible. I'm constantly making typos both at home and at the office because of minor differences, such as my computer having the colon (:) as an unshifted character, while my typewriter requires a shift, or my typewriter having the equal sign (=) where my computer has a dash (—). There is an international keyboard layout standard overseas, but none here, so these problems are common. The closest thing we have to a standard is the layout of the IBM typewriter, and even IBM's own Personal Computer layout does not adhere to it perfectly.

Incidentally, differences between computer and typewriter keyboards are not necessarily capricious. Some computer designers follow non-IBM typewriter layouts. Others think more of specific computer uses than of typewriter compatibility. For example, in BASIC programming it's handy to use the colon without shifting, and other variations make it easier to deal with the extra computer function keys mentioned above.

Ivan Berger is technical editor of Audio Magazine.

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Arcade Alley

A Critical Look at Video Games

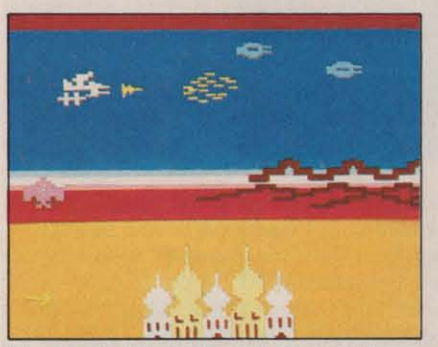
by Bill Kunkel & Arnie Katz

Where the Action Is

One of video games' greatest attractions is that they provide a test of both mental and physical abilities. Even the most bombastic blast-'em up requires brainwork to master. If one put all home-arcade programs on a continuum in which one end represents mentally stimulating games and the other extreme is occupied by physically stimulating ones, most computer simulations and video games would fall somewhere in between. This month we'll slide toward the physical end of this spectrum and give the joysticks a workout with a batch of action contests.

Mega Force (20th Century-Fox Games/Atari 2600) brings to mind the trend toward movie/video-game crossovers, one of electronic gaming's hottest topics. Parker Brothers' "Empire Strikes Back" cartridge was the first attempt to translate from the silver screen to the game screen. It was a solid effort, but overshadowed by Parker's nearly simultaneous release of "Frogger," one of the most popular arcade-to-home translations yet produced. Not all subsequent film/game crossovers have been as logical as that first one. A few are downright ludicrous. Some licenses—"Pink Panther" (U.S. Games), "Yogi Bear" (Mattel), "E.T." (Atari)—are reasonable, but the notion of turning *Kramer vs. Kramer* or *Marathon Man* into video games is far less appetizing. Software publishers have turned good films into bad video games ("E.T.") and good films into good video games ("Tron").

"Mega Force" was a megabucks film project by Hal Needham, best known for *Smokey and the Bandit* and stunts in a zillion action yarns. In it, mercenaries ride super-cycles which can fire lethal blasts from a cannon mounted on the handlebar, and even fly! With its arsenal of shticks ripped off from *The Dirty Dozen* and *The Magnificent Seven*, "Mega Force" was despised by critics and ignored by the public. However, the same concept that created a box-office dud turns out to be perfect as the premise for a video game. The concept of flying bikers duking it out with heat-seeking missiles and assault ships from the ebony-spired enemy city, while protecting your own white-towered metropolis, was a natural.



The Idea In 'Mega Force' Is to protect your own white-towered metropolis from the assault ships of the ebony enemy.

The player's goals are self-evident. You must use the joystick to steer your five super-cycles, available one at a time as the previous one expires, to keep airborne defenders from getting past you with their deadly cargos of bombs bound for the alabastar minarets of home. At the same time you must shoot your way across—and over—the multiscreen scrolling playfield so you can wreak havoc upon the enemy's capital.

The action never lets up for a second. Just when you think you might catch a little breather, the warning "Defend" appears on the screen and it's time to brace for another attack by the assault ships. What makes this good game truly great, however, is the way it looks. Watch the wheels of your on-screen chopper transform into a rocket cycle as you take to the air. This is state-of-the-art for the 2600, and such images generate tremendous excitement during play. Pulse-pounding action and eyeball-popping graphics—a winning combination!

After publishing a spate of video-game sleeping pills like "Demons to Diamonds," "Yars Revenge," "Math Grand Prix," and "E.T.," Atari has shown new life of late. Titles such as "Defender" and "Berzerk"—pretty solid action hits in their own right, come to think—have given fans hope, but the company's cartridge operation came off the critical list only when its new Boston design team began producing home editions of coin-op hits like "Vanguard," "Ms. Pac-Man," and "Phoenix."

The VCS version of **Vanguard** (Atari/Atari 2600) does a remarkable job of reproducing the thrills of the original coin-op scrolling shootout. Players use the joystick to pilot the Vanguard, which can travel horizontally and vertically, through a series of "waves." Triumph in one trial causes the game to display an overhead view of the next before the action heats up again.

The ship fires automatically in two directions, but also shooting along the perpendicular axis requires some joystick manipulation. All this firepower is needed to conquer such foes as Harley Rockets, the spike zone, and the aptly-dubbed "Bleak" zone, in which can be found the bizarre "Kemlus." You can hitch a ride on one of these nasties, but the dying creature will devour the Vanguard if the pilot attempts to blow it up when it is above or below the craft.

This cartridge's graphics are surprisingly good—all the more so in light of the number of different waves of action. Although the simplification of visuals will be obvious to anyone with a good recollection of the play-for-pay machine, the VCS edition undeniably captures the essence of the commercial arcade title.

River Raid (Activision/Atari 2600) is the first video-game cartridge to credit the work of a female programmer. But if you expected Carol Shaw to churn out a cotton-candy confection, your male chauvinism is showing. The aerial view of the mighty North/South river, with its crowded banks and warship-filled waters, is certainly attractive—but no one will ever confuse "River Raid" with "Strawberry Shortcake Meets the Smurfs." This is hang-onto-your-joystick action at its most relentless. The idea, for one or two sky jockeys, is to streak up the river staying just above the level of the lapping waves so you can strafe enemy planes and ships that bar your way.

This is no high-altitude bombing run either. Your fighter plane is so close to the surface that failure to steer a proper course will send your ship crashing down in flames on one of the steep

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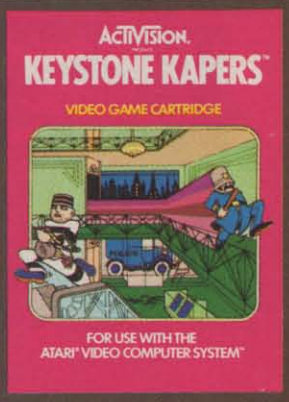

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banks. In fact, you're flying so low that to get from one wave/segment of the river to the next, you'll have to blast apart one of the bridges that periodically span the waterway. All this fire and movement drains your craft's power, but that can be replenished by flying over one of the fuel dumps, which may otherwise be blown up for bonus points.

Even the sound effects are well-integrated into game play. You'll feel genuine nail-biting tension when the klaxon sounds to indicate that you're about to run out of fuel. "River Raid" is ripsnorting hairy-chested action in cartridge form.

Computer Alley

Although many think of computer games as being somehow more cerebral than console video games, the stereotype is only partly accurate. Contests for the brain such as military simulations and fantasy adventures are certainly more numerous for computer systems, but there are also plenty of action programs for these same machines. Let's boot up a couple, eh?

Even if you've never read a Keith Laumer science fiction yarn about the super-tanks of the future, **Bolo** (Synergistic Software/Apple II/48K disk) is bound to prove a treat for electronic tankers looking for something new. It simulates combat within a macro-maze between player-directed tanks and a steadily increasing number of dumb-but-deadly tank-drones produced by factories situated at various points within the serpentine corridors. To advance to the next level of play, the tank commander must use one or more of the allotted five Bolo units (received one at a time during the course of play when the previously active super-tank meets destruction) to blow up the six

It's tanks vs. factories in 'Bolo': means of destruction vs. means of production.

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factories in each maze. The longer a production plant remains in operation, the more robot tanks it pumps out, so speed is essential.

Before the start of play, the computerist gets a chance to select one of nine skill levels and one of five maze densities. The high-score feature makes no distinction between various combinations of settings, and shutting off the computer wipes out all the top totals in memory. The neophyte must begin with a maze density of 1 or 2. Steering with the joystick isn't too hard, but movement is fast and takes some practice. Otherwise, there's a good chance that you'll squander one or more of your Bolo tanks by letting them blow up in a collision with one of the walls.

Since the Bolo driver can't see the whole maze, the control panel is the focus of attention. It shows the amount of remaining fuel, relative position of the Bolo within the overall labyrinth, and location (by quadrant) of the still-functional drone factories. It's always in view just to the right of the main display, and you'll refer to it often.

"Bolo" can start slowly, particularly at the lower difficulty and density settings, but patient action fans will be rewarded with a contest as rich in blazing combat action as in strategic subtlety.

Wavy Navy (Sirius Software/Apple II/48K disk) is a successful cross between combat and invasion genres. It delivers an excellent variety of action with a design just different enough from the norm to keep veteran home arcaders on their toes. The game gives one to four players the opportunity to ride the ocean waves and do battle with an armada of planes and helicopters.

The pitching and rolling of the waves, further complicated by the appearance of floating concussion mines during the difficult waves, makes it almost impossible for the gamer to precisely position the horizontally mobile vessel at the bottom of the screen so it can fire upward at the formation of aircraft that cruises back and forth across the sky. Instead, "Wavy Navy" calls upon the competitor to fire and move simultaneously and unceasingly throughout the game. Stand still for an instant and if a kamikaze plane doesn't plow into your P.T. boat from above, a mine will put a hole in its hull from below. And that's not even to mention the enemy helicopters, which drop a whole rack of bombs on the boat whenever they descend to sea level amid a cacophony of rotor blades.

"Wavy Navy" can be played using the keyboard, an Atari joystick with Joyport, or a standard Apple-compatible paddle. The two-voice soundtrack can come from the Apple II as with most disks, or it can be switched to the cassette port for connection to audio-system speakers.

How to tell if your state-of-the-art VCR has an old-fashioned battery pack.

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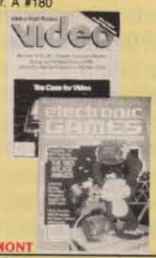

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