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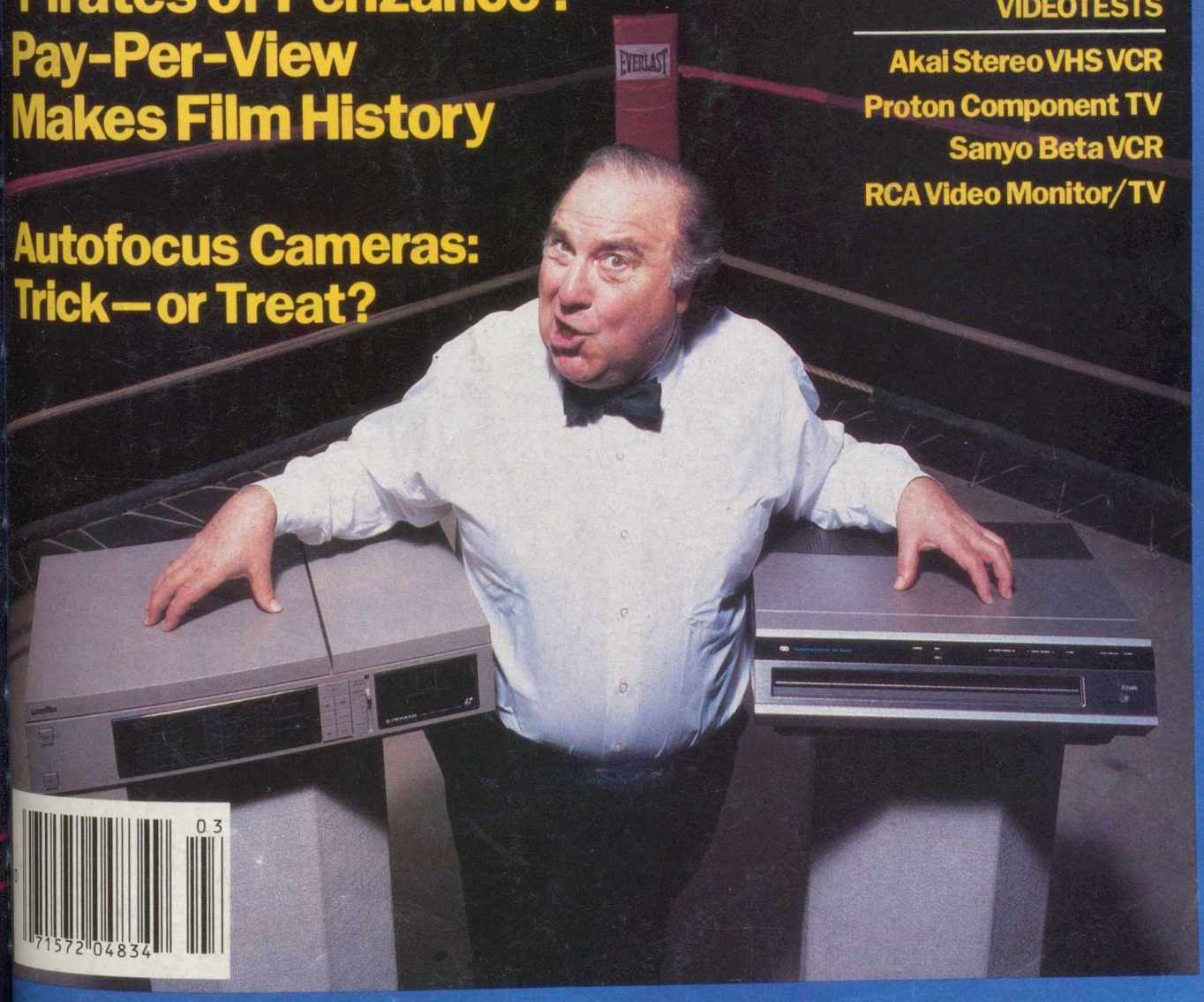

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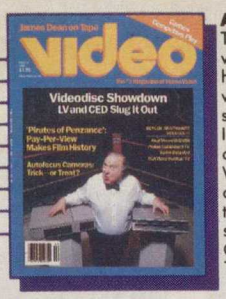
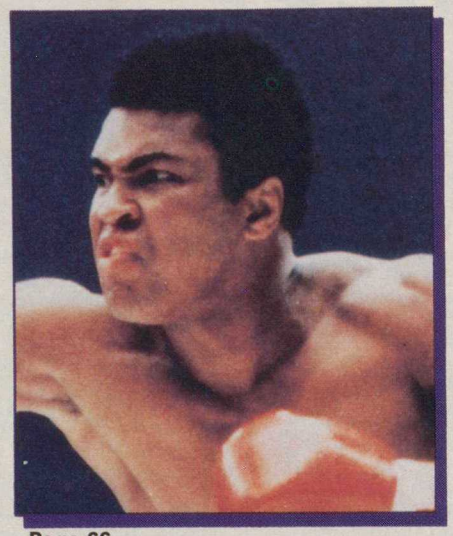


ABOUT THE COVER
The battle of the videodisc formats has become the most volatile video issue since Beta vs. VHS. In this issue, associate editor Woodcock and contributor Wielage take a hard look and say what they think. Cover photo by Tom Weihs.



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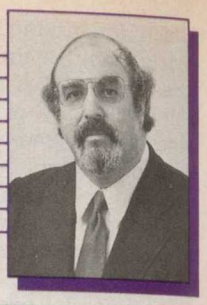
Computer Ease



The Human Interface

by Ivan Berger

Why a Computer Has a TV Screen

There are many reasons why computers interest videophiles: the lure of new technology, the joy of a hobby with active involvement, and the fact that both use TV screens. The last might seem just a trivial coincidence, but it is rather more.

I know, because I began dabbling in home computers back when the usual home computer had no TV screen. Back in the middle '70s, the norm was a computer with no built-in keyboard or display, hooked up to a used Teletype. Whatever you typed on the Teletype keyboard, and whatever the computer replied, would be printed out slowly and noisily till the living-room floor was covered with a long flat snake of paper. Pretty soon cathode-ray tube (CRT) terminals with keyboards and video screens replaced the Teletypes.

And by the late '70s you could buy computers with keyboards and video displays built in—a big advance. Video displays are volatile; their contents can change in a fraction of a second. That speeds information from the computer to you. It also speeds your comprehension of that information since the screen can be cleared of extraneous material by a single command before displaying new information.

The video screen made old computer uses more practical. Now one can write and rewrite a program or a document or chat by wire with other computerists without the printer's noise or the litter and cost of a paper blizzard. It also makes possible new uses: computer action games, for example, could not be played on paper. They're just video games played on a less specialized computer.

The video screen also brought a new element: color. Multicolor printers for home computer use are just beginning to appear. But color TV tubes were available long before computers were, and most of today's most popular computers take advantage of that with color video displays.

Color is fun. And so far, it's mostly been used for playful programs, either to make games look livelier or to let you draw in color on the screen. But color also highlights information. Color can make vital information stand out. Color-coding can make it apparent at a glance which information items are grouped together. Business programs are beginning to make use of this, and you'll see more of it in years to come.

Color displays have drawbacks. Cost is the obvious one: the lowest-priced black-and-white TV sets cost about $80, while color ones start at $250.

A less obvious drawback is resolution. The cheapest black-and-white sets commonly have resolution that puts the best color sets to shame. If crisp, sharp characters count heavily with you, you'll probably be much happier with a black-and-white display. That—not cost—is a major reason why so many office and business computers don't use color. If you're staring at a screen all day, you need the sharpest, crispest image you can get; even slight fuzziness aggravates eyestrain.

Black-and-green or black-and-amber tubes are even easier on the eyes, but the color makes only a secondary difference here. The primary one is the tube's "persistence."

Video images are painted on the inside of the screen by electron beams. The screen's phosphors light up as electrons strike, then dim again. Persistence is the length of time the phosphors glow after the beam moves on. Television tubes have short persistence for fast transitions between pictures. Images move on those screens, and blurs result when the image of the old frame overlaps that of the new.

But computer images frequently stay static. For example, this text is being written on a computer with the first lines of this paragraph fixed at the top of the screen while I add new lines below it. No word will change (unless I rewrite) until I reach the bottom of the screen, somewhere in the paragraph to come. Fast screen updating is no advantage here though my screen has the short persistence that would allow it.

In fact, short persistence is a disadvantage. Because of short persistence, the characters on this screen are flicking on

The Radio Shack TRS-80's phosphors strut their stuff with a video game.

and off about 60 times per second. I can't consciously see it, but this subliminal flicker contributes to eyestrain. In Europe, where house current and video displays work on a slower 50-Hz cycle, the flicker is sometimes directly noticeable.

A longer-persistence tube will cure that. However, it will probably also cut down on my computer's ability to play action games, leaving ghostly light trails in the wake of moving images. (Shooting aliens with tracer bullets? Hmmm. . . .) Since I use this machine primarily for business and do games and graphics on other machines, the change will be worth the tradeoff.

With some computers, the only choice of display comes when you buy the machine: you either accept whatever display is built in or buy some other computer. With other computers the choice is wider: the display is a separate screen, so you can buy whatever size you like, in monochrome or color. Most of today's computers are this way, including virtually all the color ones.

You may also have a choice of ways to hook your computer up to its screen. The lowest-cost computers just hook up to the antenna inputs of an ordinary TV set, usually through a switchbox (like those sold with video games), so the TV can receive either TV or computer programs as you choose. If you already have a video game or other devices that hook up there, you might consider an RF switcher to handle several of them.

For sheer economy, you can't beat making your TV do double duty, especially as you already have a TV set. (Are there any readers of this magazine who don't?) For maximum screen sharpness and detail, however, you're best off buying a computer with direct video outputs and a video monitor or TV monitor/receiver with direct video input connections.

The difference is largely in the amount of circuitry through which the signal must pass. To hook up your computer to a TV set, its video output must be passed through an RF modulator to convert it to a radio-frequency signal; then it must pass through the TV set's tuner, which demodulates it back to video again. It's bound to lose a little something in the process. Computers and monitors that lack these extra circuits usually cost more than those that don't. That's because they're not yet in as great a demand as the others. With increasing mass production, the cost should drop a bit.

Most video inputs and outputs are designed for "NTSC composite video" signals. These combine luminance (black-and-white), color, and sync into one signal. Some new systems use "RGB" signals instead, with separate hookups for red, green, and blue light levels. Such signals can have greater bandwidth than NTSC signals because they need not leave headroom for NTSC's color carrier at the top of their frequency band. Greater bandwidth means more resolution. V

Ivan Berger is technical editor of Audio Magazine.

Arcade Alley

A Critical Look at Video Games

by Bill Kunkel & Arnie Katz

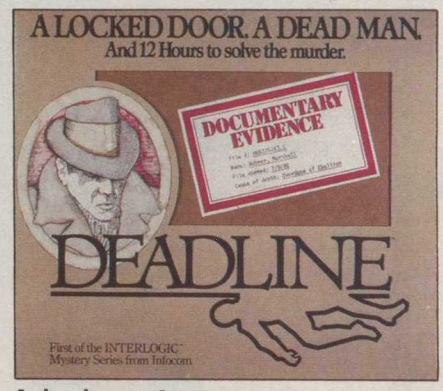
The Best Computer Games

As promised last month, this time we'll review computer programs that walk off with the statuettes in the 1983 Arcade Awards competition. Though more Arkies are in this year's computer-software division than in any previous year, expansion in the field made it more difficult than ever to win. The quality and diversity of current microcomputer games is amazing, especially to those of us who still remember when video tennis was a revelation.

☐ Computer Game of the Year: **David's Midnight Magic** (Broderbund/Apple II). Video pinball has been one of those ideas that sound great but don't work out well—until now. David Snider has created a program that is both an exciting video game and a fairly faithful evocation of pinball mystique. The two-level playfield provides plenty of varied action, and the features include a bonus multiplier and the possibility of multi-ball play. Certificates of Merit: **Bandits** (Sirius Software/Apple II), **Castle Wolfenstein** (Muse/Apple II).

☐ Best Computer Adventure: **Deadline** (Infocom/all popular systems). Did Mr. Rubner commit suicide or, as some fear, was he the victim of foul play in his own home? As detective in charge of the case in this text-only adventure, you have only 12 hours to ferret out the truth and bring the murderer to justice. Though it lacks illustrations of any kind, "Deadline" is still one of the most advanced adventure programs published last year. For instance, the player can communicate in full sentences, not just the telegraphic verb-noun phrases other such disks generally employ. This gives the dialogue a richness and realism seldom encountered in other similar programs. Certificates of Merit: **Time Zone** (On-Line/Apple II), **Kabul Spy** (Sirius/Apple II).

☐ Best Science Fiction/Fantasy Computer Game: **Star Warrior** (Automated Simulations/Apple II, Atari 400, 800). This action adventure casts the player as a member of the Furies, an intergalactic force committed to helping the weak obtain retributive justice. The specific mission here is either to assassinate the tyrannical governor of the planet Fornax or to provide a diversion so that another Fury can dispatch the despot. The player has a lot of equipment choices, including a battle suit; the disk version allows the computerist to design a custom suit of armor. Even the instruction book is a cut above the rest. Certificates of Merit: **Empire I** (Edu-Ware/Apple II), **Caverns of Mars** (Atari/Atari 400, 800).



A dead man. A neat game.

☐ Best Arcade/Action Computer Games: **K-razy Shootout** (CBS /Atari 400,800). As the first cartridge game for the Atari computer systems produced by an independent software publisher, "K-razy Shootout" would've drawn more than the usual amount of public notice. It is a fine maze-shoot akin to Stern's "Berzerk" coin-op machine, in which the player must blast through a series of increasingly more deadly rooms patrolled by antagonistic robots. The robots pop into view along the edges of the room, and the player must move the on-screen character with style and panache to zap all of them before the countdown timer at the bottom of the screen runs out. Certificates of Merit: **Crossfire** (On-Line/Apple II, Atari 400, 800), **Star Blazer** (Broderbund/Apple II).

☐ Best Computer Audiovisual Effects: **Night Mission** (subLogic/Apple II). This is another prize-winning pinball simulation, with the accent definitely on the word "simulation." The programming wizards at subLogic even have a nifty animated sequence in which an electronic quarter chunks into the slot to initiate the action. And if you don't like the set of sounds and pictures standard on this disk, a special program allows the computerist to modify about 40 different parameters to suit his

'K-razy Shootout' is the first Atari-compatible game from an independent producer.

taste. So if you like the idea of multiple ball shadows, slow motion, or shriller sirens, you can fine-tune "Night Mission" to your specifications. Certificates of Merit: **Choplifter** (Broderbund/Apple II), **Preppie** (Scott Adams/all systems).

☐ Best Computer Sports Game: **Cypher Bowl** (Artsci/Atari 400, 800). For some strange reason, sports programs haven't been too popular in the computer-gaming field thus far. One solid effort at changing this state of affairs is "Cypher Bowl," a two-player football contest for the Atari systems. Although the orientation of the field on the screen—with its goalposts at top and bottom rather than at the sides—is unorthodox, this is the most enjoyable pigskin romp yet published for this machine. A simple joystick-activated control system makes it possible for offensive and defensive coaches to quickly choose from a wide range of formats and plays. Certificates of Merit: **Football Strategy** (Avalon Hill/several systems), **Juggler** (IDSI/Apple II).

☐ Most Innovative Computer Game: **Moonbase Io** (PDI/Atari 400, 800). Many people had noticed that the Atari disk drive and cassette player could be hooked up to the computer in series, but no one did anything with this setup until PDI gave gamers this outer-space shoot-'em-up. Any game will post a high score when you zap enough alien nasties, but how many will play a congratulatory message from the president? The inclusion of real communications using human speech takes an already excellent space game and raises it to the level of the truly elite programs. Even in a year marked by striking innovation, PDI doubly earns its Arcade Award statue with this highly ingenious piece of software. Certificates of Merit: **Nautilus** (Synapse/Atari 400, 800), **Arcade Machine** (Broderbund/Apple II).

☐ Best Solitaire Computer Game: **Snack Attack** (Datamost/Apple II). An outstanding solitaire game is one you can play over and over and still find interesting and involving. The multiple mazes, charming graphics and sound effects, and well-nigh-addictive play action of this maze-chase program make it a great choice on a rainy afternoon. The presence of color-coded doors in some of the walls of the labyrinth is another big plus, adding an extra dollop of strategy to a game that might otherwise have too much emphasis on pure hand/eye coordination. Certificates of Merit: **Omega Race** (Commodore/VIC-20), **Neptune** (Gebelli Software/Apple II).

There you have it, the full slate of winners. Before next issue, the paving crews are going to converge on "Arcade Alley" and enlarge it a bit. Starting with the next installment of this column, we'll be getting slightly more space in VIDEO magazine to cover some hot computer games as well as the usual video-game cartridges. See you all then.