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The Apple II Journal

RGB MONITORS:

Best of the Brightest

How to Write Great Game Programs

Your First Lesson in Assembly from Roger Wagner

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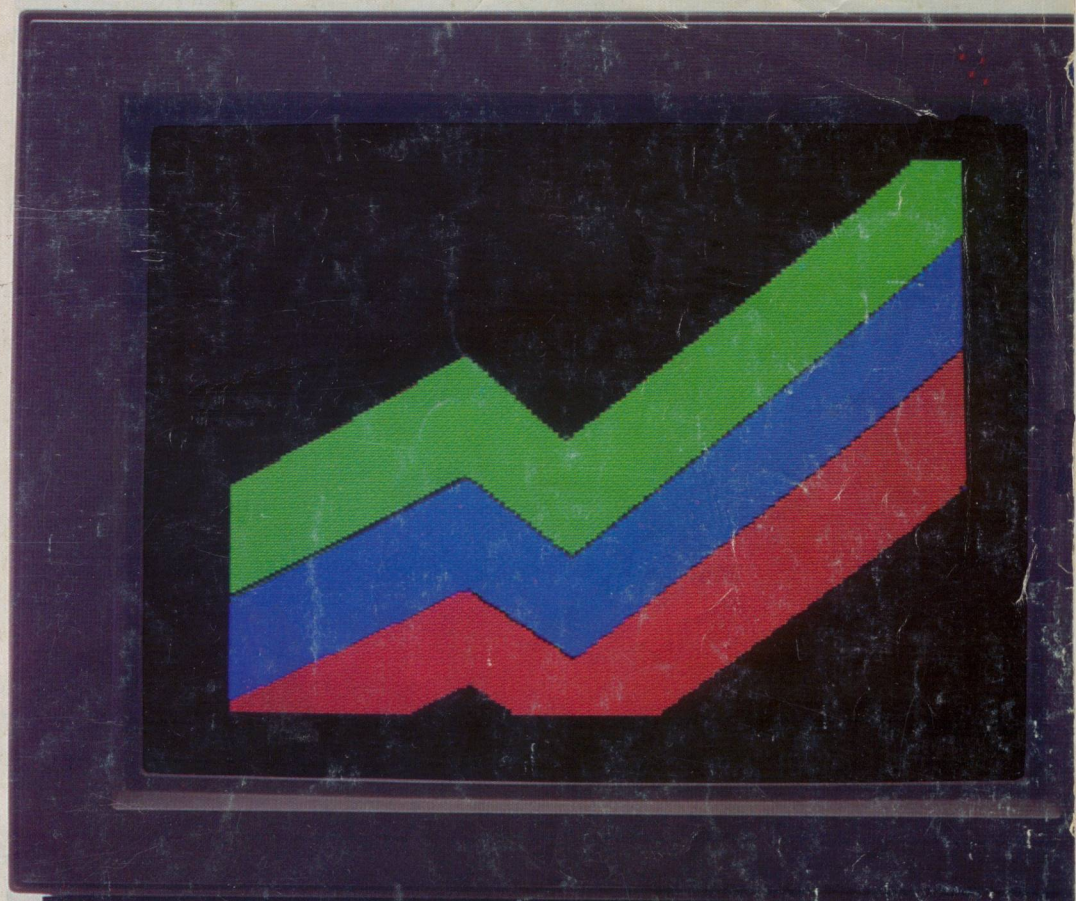

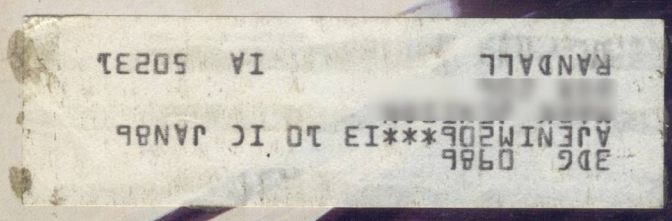

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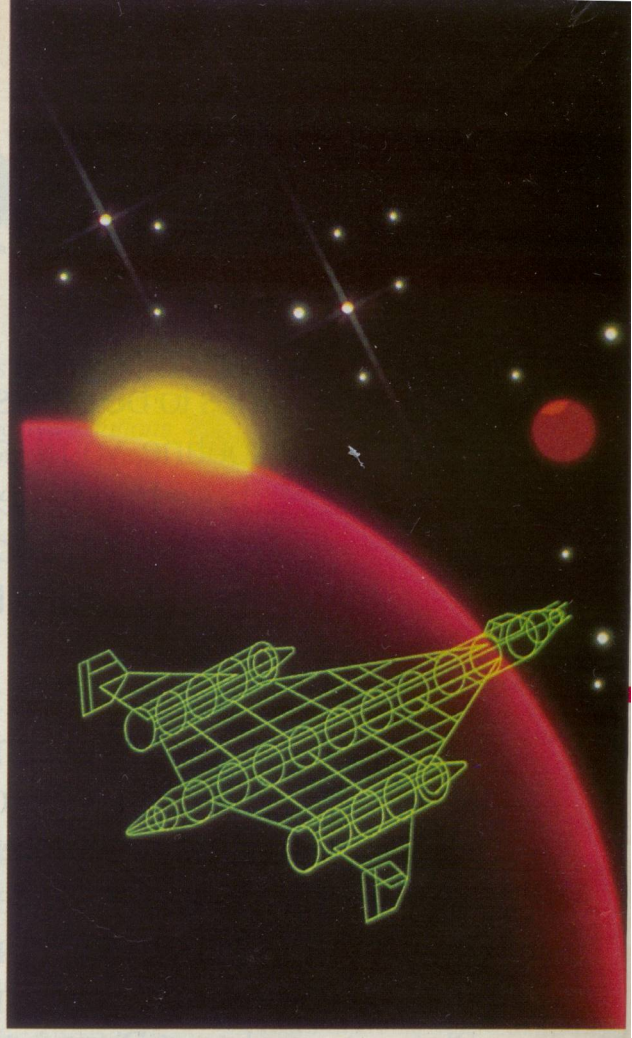

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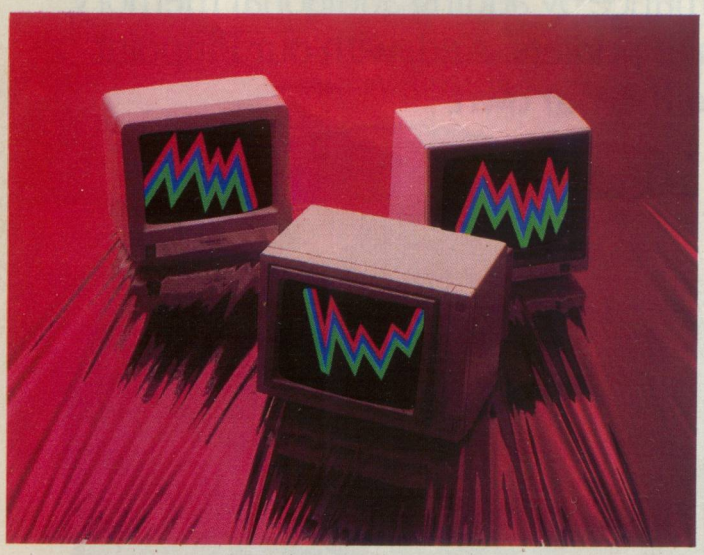

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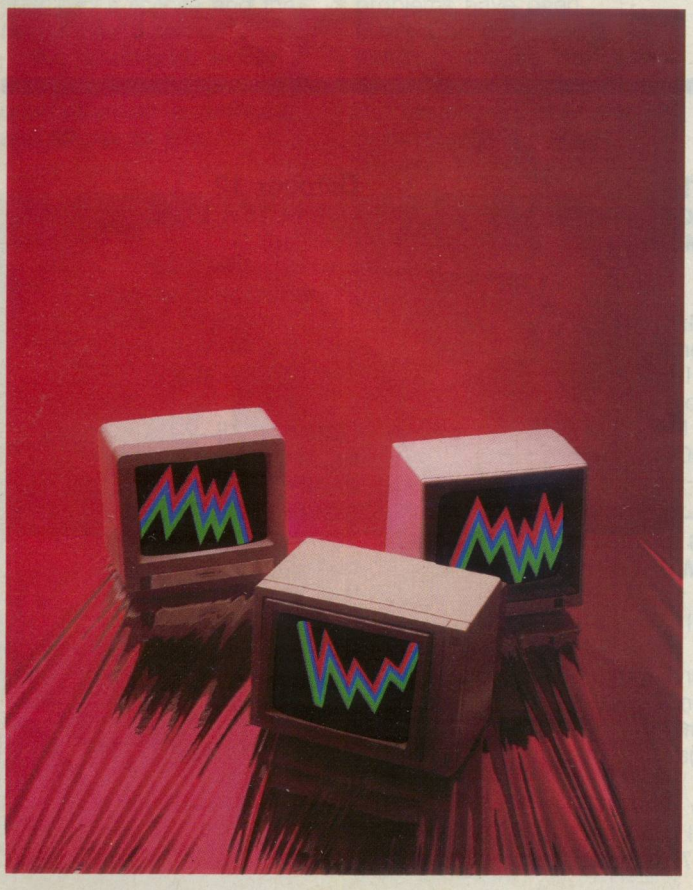
Screen Tests

You **can** *judge an RGB monitor by its color—and by its brightness, resolution, dot pitch, and more.*

by Bill O'Brien



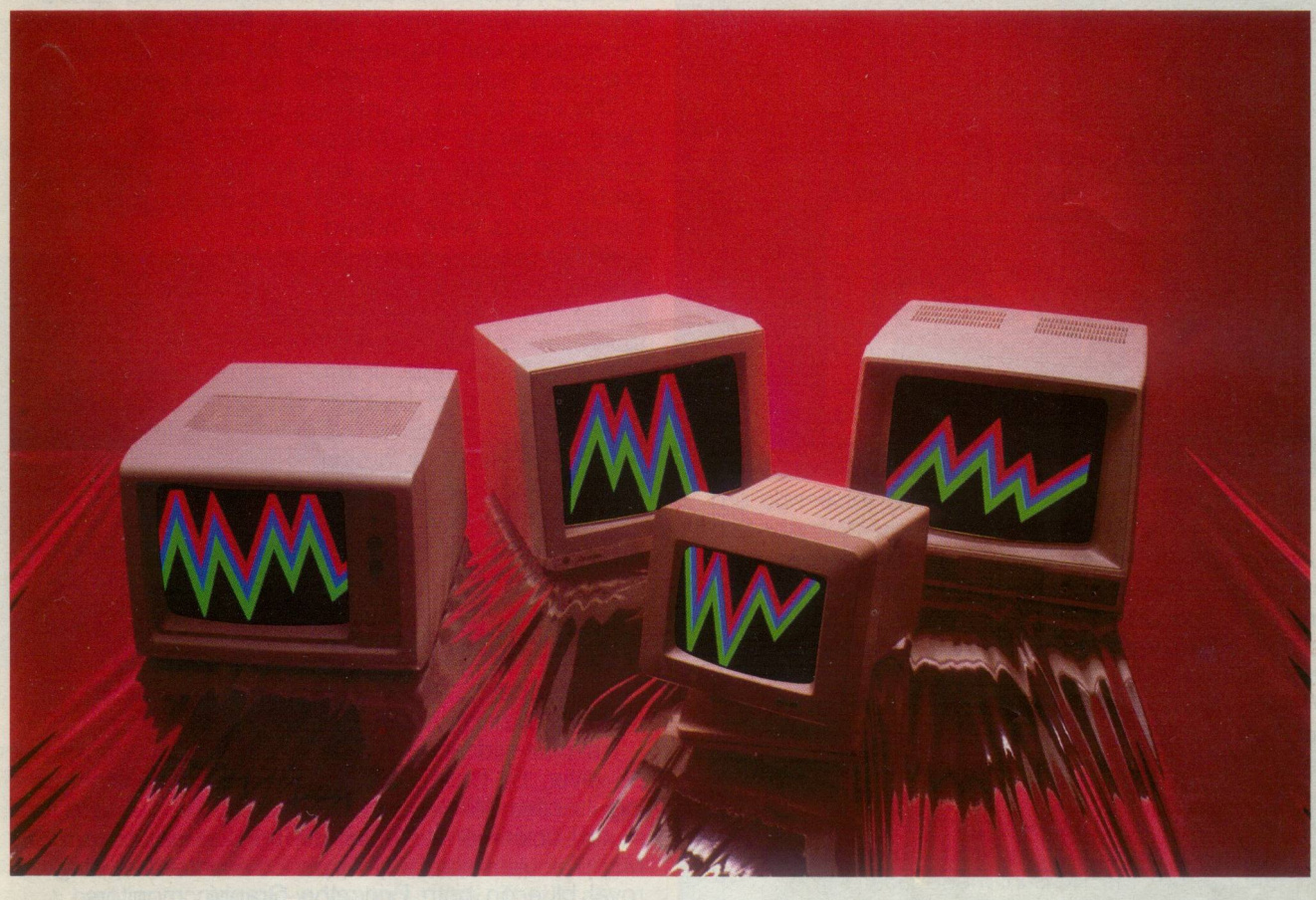
Sociologists may deliberate about the number of hours we spend in front of the computer screen, but for us, all that matters is how well we see the images flashing before our eyes.

If you've ever tried to destroy 3000 aliens on a monochrome monitor, you already know it's no fun. An RGB color monitor, however, enhances your Apple's graphics applications. You're given more options in word processing—black letters on a green screen, for example. For business use, RGB color enhances your tables, charts, and figures. In education applications, sharp color captures children's attention and encourages interaction.

Rather than accept a premixed (composite) color signal, standard on Apple II computers, an RGB monitor is fed separate red, green, and blue signals along with the information needed to organize those colors into a usable display of eight colors. The colors are brilliant, and 80-column text displays are as sharp as those found on any better-quality monochrome monitor.

Prehistoric Times

Originally, RGB monitors were quite expensive—$800 to $1000 for one of moderately good quality. Today, you can buy a decent RGB monitor for $500 to $600. Apple has its own 80-column, 64K-expansion, and RGB-display-board combination. Many RGB monitor manufacturers make Apple-compatible RGB interface boards. The barriers to bright colors



and crisp text displays have fallen, which is a good reason to see what's available.

Setting the Standards

But you'll soon find yourself up to your keyboard in RGB monitors. To help you decide, I reviewed seven monitors (see the **Table**) in three screen sizes: 9, 12, and 13 inches. Some of the monitors are specifically designed to use Apple's standard digital approach to RGB displays. Others, catering to the IBM PC market, can't be plugged directly into an Apple RGB display module, because they use a different connector. In addition, the required synchronization signals aren't the same as those generated by the Apple. To surmount this little problem, I borrowed a Mappler RGB converter from Video-7; this device makes Apple-originated signals compatible with IBM-oriented monitors.

Some manufacturers offer a third mating option—a nondescript connector capable of handling a variety of RGB inputs. In those cases, the connecting cable determined the monitor's compatibility.

For this review, Video-7 also supplied the RGB-interface modules that process the Apple's raw video. While its Apple //e model is identical to Apple's RGB combination board (both cards have a Video-7 copyright), Video-7 also has an RGB interface for the Apple //c. The Mappler works with the //c module, but because the Mappler is an unenclosed PC board designed for connection inside the //e's back panel, Video-7 doesn't recommend it for the transportable //c.

Under Scrutiny

To uphold truth in testing, I adjusted each monitor to yield the same brightness and contrast. Using International Apple Core's Disk #45—a public-domain copy of the game Defender—I performed subjective tests and submitted each monitor to a gruelling half hour of shoot-'em-up action, complete with multicolor laser blasts and explosions.

The objective and subjective results should indicate the quality of RGB monitors. Watch out for resolution, however. In double-hi-res mode, the Apple can display 560 by 192 dots. Typically, most monitors handle a screen resolution of 640 by 240 dots. You might be tempted by the "more is better" philosophy, but a monitor with resolution as good as that your computer provides is more than adequate. It's usually a waste to spend more money just because a monitor has a higher resolution.

Also compare dot pitch, the size of each dot on the screen: the smaller the number (usually in hundredths of millimeters), the better.

The Line-up

Apple

When you turn on Apple's Color 100 you hear a sound that might accompany the start-up of a dynamo. Inside, a motor operates a tilt screen which

Apple Color 100

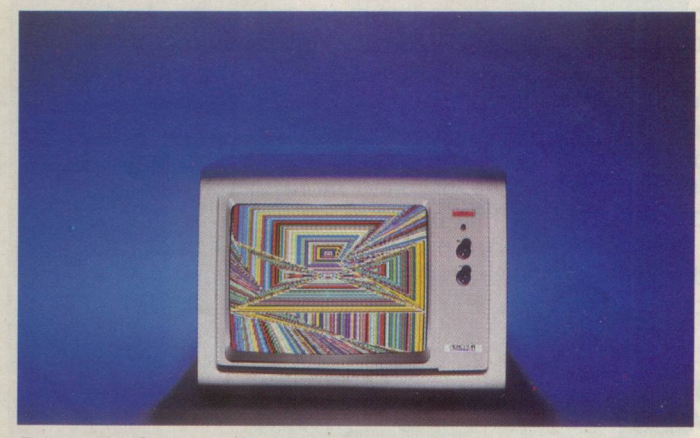
you can position up or down to a maximum of approximately 30 degrees from horizontal, to offset glare from poor room lighting. (Of course, it was one of the heaviest monitors in the group because of the extras.)

Visually, it's accurate. Reds are red, blues are blue. But its color display isn't outstanding. Although I held it as the standard by which to judge the other monitors (as intangible as that may sound), the images lacked vitality, especially the yellows. For text work, you can select from among four default character colors from the RGB-interface board (the Video-7 board allows green, amber, blue, or white) or choose green from a switch on the monitor.

The Apple logo is a driving reason to buy the Color 100. While most dealers service the merchandise they sell, Apple products have traditionally enjoyed a quicker turn-around time for repairs. Also, the Color 100 is directly compatible with standard Apple RGB interfaces, alleviating the expense of a Mappler.

Princeton Graphic Systems

Princeton Graphic Systems has made quite a name for itself in the IBM world as a supplier of quality—yet cost-conscious—video displays. The SR-12 is a super hi-res display designed for a special add-on video board to the IBM PC. It doesn't seem compatible with the Apple II, though, despite the Mappler's attempt to sort the correct signals.



Princeton Graphic Systems HX-12

The HX-12 is a 12-inch display using an IBM standard connector. The Mappler solved the rewiring problems to the Apple, and the monitor worked superbly. The colors were rich and vibrant; black backgrounds were, indeed, black.

PGS's HX-9 is a chip off the HX-12's block, but scaled down to a 9-inch diagonal display. It surprised me. I anticipated cramped video and major concessions to 80-column text readability. I was wrong. "Crisp" and "intense" immediately came to mind. The monitor handles text either through the interface-card options or a switch selected from the monitor as green or amber.

Clarity made the HX-9 my favorite. Its tilt/angle adjustable stand didn't detract from its utility, either. The only problem I encountered was an annoying whine from a transformer, but it stopped five minutes later.

Princeton Graphic also shipped a PGS-80 card, which offers plug-compatible connectors for its monitors and eliminates the extra expense of the Mappler. The card's major drawback is its lack of memory expansion.

I almost did a disservice to Princeton Graphic, however, by basing the review on screen shots using its card. While the PGS-80 card produces pale, muted colors on its monitors, the Video-7 board/Mappler translated the Apple color into a striking royal blue on both Princeton Graphic monitors. Princeton's card produced a shade only slightly more intense than sky blue.

Princeton Graphic added a puzzle: The HX-9 has an Apple-IBM switch on the back, and you can correctly cable it without a Mappler. Instinct normally dictates that you set the switch to "Apple." Doing so, however, distorts and muddies the color values, degrading the visual impact.

In the "IBM" position, without the Mappler, there is a small difference in some color values, but they

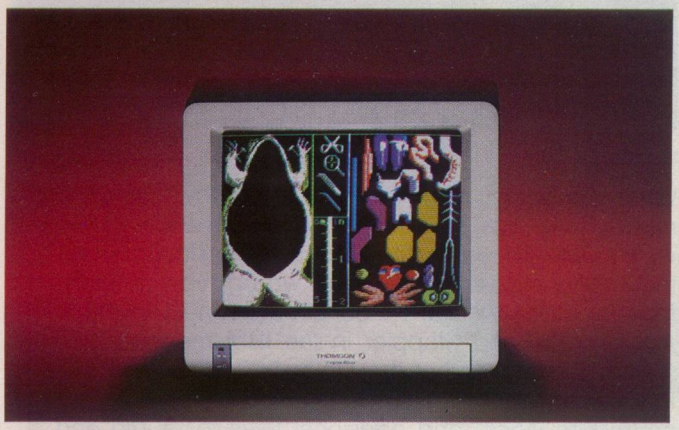
Table. Comparison chart for seven RGB color monitors.

Monitor	Manufacturer	Price	Screen Size
Color 100	Apple	$599	12″
HX-12	Princeton Graphic	$695	12″
ZVM-135	Zenith	$599	13″
Color 500	Amdek	$525	13″
HX-9	Princeton Graphic	$650	9″
CV36432SI	Thomson	$499	14″
SC-200	Sakata	$599	13″

are still vibrant. If you do forego the Mappler, keep the switch in the "IBM" position anyway. My only serious complaint with the HX-9 was its comparatively high price.

Thomson

If you've never heard of Thomson before, you're not alone. This new French company enters the



Thomson CV36432SI

American monitor market with 15 monochrome, composite color, and RGB monitors. The CV36432SI, from Thomson's professional series, is an IBM-based monitor that works fine with the Mappler. Although the review model sported an audio input, it had no composite-video input line. That's an odd arrangement, but no one says you absolutely must have composite video.

For fairness' sake, the review model was an advanced-release, pre-production model, which may account for some oddities in the brightness and contrast controls. After I adjusted the controls, things coalesced into a new degree of light or dark. Thomson probably used the wrong variable resistors for the brightness and contrast controls in only the preproduction model.

Actually, it's not a bad monitor. When everything was in place, the result was a very pleasing display that fell a hair short of Zenith's ZVM-135 in color quality. This monitor is no slouch, and its downranged pricing makes it very attractive.

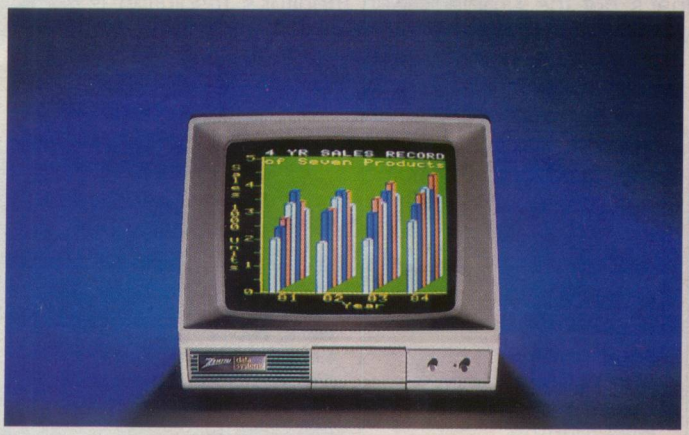
Zenith

Zenith isn't just a television manufacturer. It was one of the first suppliers of 12-inch green-phosphor monitors for the II Plus. (Though inexpensive, they were terrible.)

I almost reached for my sunglasses when I flipped on the Zenith ZVM-135 and powered up the Apple. The 13-inch screen came alive with color. Subjectively, it earned a slight edge over the HX-9. For straight text, you can select between green and white characters.

The connector on the back of the ZVM-135 is a nonstandard 25-pin. Zenith has made provision for quite a few different computer brands, including Apple. The correct cable is a ZVM-135-3, and there are no additional switches to set.

Unfortunately, the monitor was shipped with an IBM cable that required a Mappler to make it Apple-



Zenith ZVM-135

Blue indicates which special features accompany monitor.

Video Characteristics				Special Features				Interface Characteristics			
Lines	Char. per Line	Resolution	Dot Pitch	Anti-Glare	Composite Video	Sound	Tilt Screen	Apple	IBM	Other	Cable Supplied
25	80	see note*	.38mm	■			■	■			■
25	80	690 × 240	.31mm	■					■		■
25	80	640 × 480	.43mm		■	■		■			■
25	80	560 × 240	.51mm		■	■		■			■
25	80	640 × 200	.28mm	■			■	■			■
25	80	560 × 240	.43mm	■		■			■		■
25	80	640 × 240	.39mm								

*Apple states resolution in scan lines. The Color 100 has a 600-line resolution at the center, 416 at the corners.

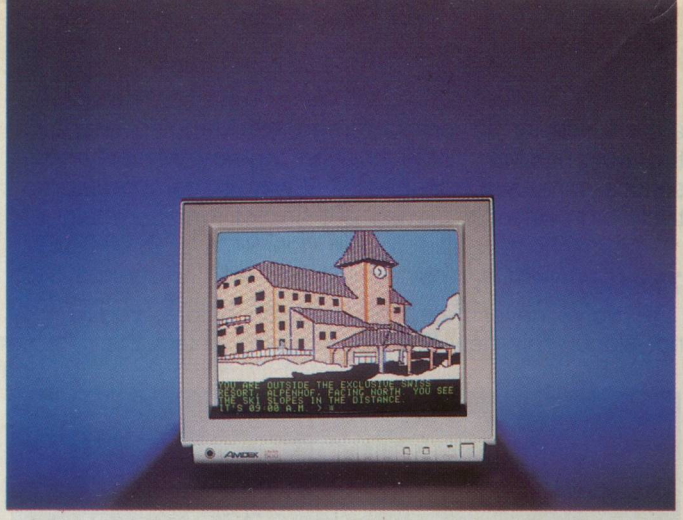
compatible. It would have been interesting to try what Zenith considers the correct cable to see if the color varied.

If you ever tire of your Apple and desire additional entertainment, the ZVM-135 is compatible with your VCR's composite video (via a rear slide switch) and will also accept an audio input, amplify it, and let you listen from a built-in speaker. Zenith includes an audio-output line if you prefer not to use the Apple speaker.

Amdek

Amdek is an old friend. I've been using the Color I composite monitor on my VCR, and the Color II RGB monitor was my only choice when I needed a quality RGB color monitor for another computer. So, I was more than eager to see the Color 500, which is from a new series of monitors that are both Apple- and IBM-compatible. I should have tempered my eagerness.

A quick look at the comparison chart reveals that the Color 500's horizontal resolution is slightly lower than that of most of the other monitors tested. But that's not the problem. The monitor's resolution is well within the capabilities of the Apple's resolution.



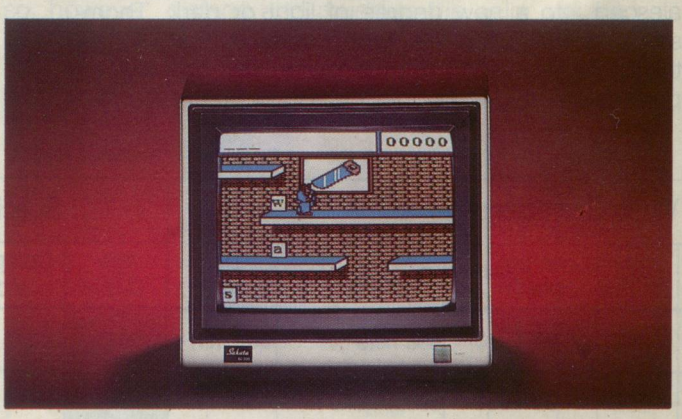
Amdek Color 500

What did bother me were the colors; they were muddy. Red was a forlorn magenta. The colors were closer to what other monitors produced when their switches were set for the wrong type of interface. (For the record, I tried direct-connect in the Apple mode and Mappler in the IBM mode.)

The problem is that the Color 500 is packed with features. It touts an RGB input, a separate line for composite video, and additional lines for audio and video signals from your VCR. (You can select RGB/Composite through a rear panel switch, while VCR can be punched up from the front, no matter which of the other two modes you're in.) The composite and VCR modes produce brilliant colors. And there's the surprising audio punch from its internal speaker. If you need the versatility, the RGB let-down might be tolerable.

Sakata

The Sakata 200's interface is IBM standard, requires the Mappler, and has a 13-inch screen, but that's about it. There's nothing outstanding about the monitor.



Sakata SC-200

The timid colors don't help the Sakata 200. Nor does the lack of a contrast control make the less-than-black background more than marginally tolerable. Overall, it's a lower-quality monitor—though its price hardly reflects that—and I can't recommend it.

Heartless I'm not. I talked to Sakata representatives, and they, too, recognize the monitor's shortcomings. A new model, the SC-150, is scheduled for August release. It promises a black-matrix tube

Product Information

Color 100
Apple Computer
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
$599
Reader Service Number 313

Color 500
Amdek
2201 Lively Boulevard
Elk Grove Village, IL 60007
(312) 595-6890
$525
Reader Service Number 314

CV36432SI
Thomson
330 Washington Street
Suite 509
Marina del Rey, CA 90292
(213) 821-2995
$499
Reader Service Number 315

HX-9, HX-12
Princeton Graphic Systems
170 Wall Street
Princeton, NJ 08660
(609) 683-1660
$650, $695
Reader Service Number 316

SC-200
Sakata
651 Bonnie Lane
Elk Grove Village, IL 60007
(312) 593-3211 in Illinois
(800) 323-6647 outside Illinois
$599
Reader Service Number 317

ZVM-135
Zenith
1000 Milwaukee Avenue
Glenview, IL 60025
(312) 391-8869
$599
Reader Service Number 318

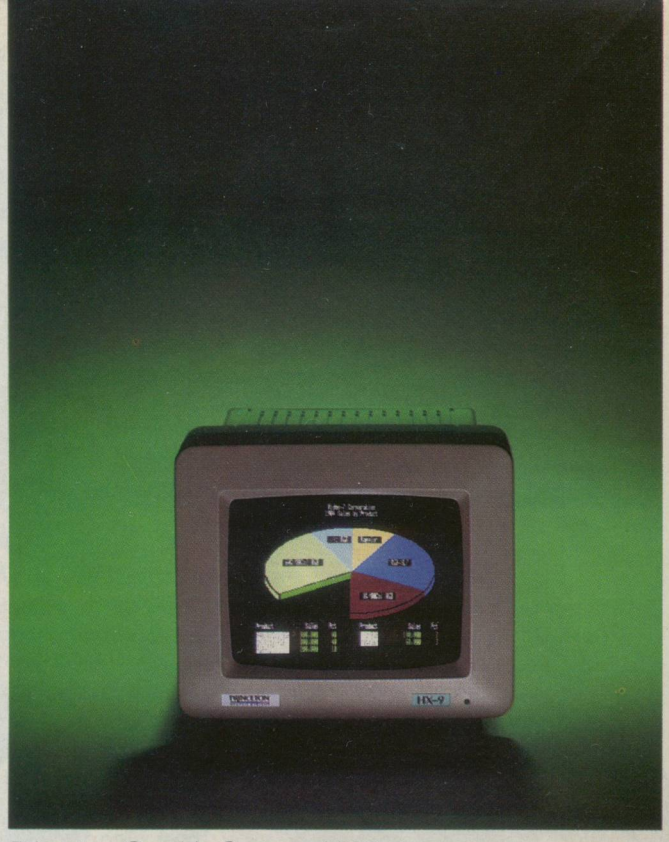
and composite/sound capability at $90 less than the SC-200. The dot pitch will increase to .42mm on the SC-150, but you might want to look at it first.

And the Winner Is. . .

When I started this comparative review, I convinced myself there was no way to select a clear-cut "best" RGB monitor—or even attempt to establish a hierarchy, for that matter. I was wrong. If you can afford the $650 price tag, Princeton Graphic's HX-9 is an outstanding choice. It beats the rest by a wide margin. Ranking a solid second on the list is Zenith's ZVM-135. But if you want to save $100—and sacrifice a bit of color vibrancy (but add an additional 1 inch of diagonal viewing area)—seriously consider Thomson's CV36432SI. (By press time, Thomson promises a shorter model designation.)

Your individual needs will dictate the monitor you choose, but consult the comparison chart before you open your wallet.■

Write to Bill O'Brien at P.O. Box 1010A, Fort Lee, NJ 07024.



Princeton Graphic Systems HX-9

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