

amazing things with 4096 usable colors out of a palette of 16.8 million, and resolution of 512 x 512. Actually, with your own PC you can start even cheaper, at \$2,500, with Video Associates Labs' Micro-Key. Now compatible with both Apples and IBM PCs, MicroKey does RGB or composite keying, genlocking, and adjusts H phase, burst phase, and proc amp, so that any graphics you can create with the microcomputer are of broadcast quality—though you are obviously stuck with the PC's palette and resolution.

Raise the ante to the \$30,000 to \$100,000 level, and there is no doubt which graphic-maker was on most attendees' minds at NAB: Ampex's AVA was, in its day, the most popular of graphics generators. Designed for its vendor by

the New York Institute of Technology's Computer Graphics Lab (then run by Ed Catmull, who went on to manage George Lucas's Industrial Light & Magic). When the product became outdated a couple of years ago, Ampex still had not developed its own capabilities in designing a successor, and Computer Graphics Lab was now a competitor, selling its own creations. So it took a while to come out with a worthy next AVA generation, but now AVA-3 is all it ought to be. For \$89,900 alone, or \$73,950 when purchased with ESS-3 still-store, AVA-3 is a paint system based on 24-bit CPU, offering 16 million colors, a library storage system, extensive menus for cut-and-paste, digitizer for entering artwork, and "view" mode for trying out an effect be-

fore committing to it.

Computer Graphics Lab's Images II system—their in-between generation answer to the original AVA they sold away, is now selling for \$46,000 in basic configuration—that is, with a single eight-bit frame buffer. This gives resolution of 512 x 486, 256 colors displayable out of 16.8 million. Up to three frame buffers may be used, totalling up to features such as: transparent colors, airbrushing, paint smearing and fingerpainting, a large library of pre-programmed and user-defined brushes, texture painting, drafting, and more beyond the ability of this reporter to take notes while standing up and drinking.

3M splashed into the paint system business this spring, too. Their BFA is a complete break with the previous 3M D-8800 series of graphics generators; for \$32,000 you get a 16-bit CP/M-86 system with 16 million colors, 16:1 zoom, 28 brush styles, independent control of hue, saturation, and intensity, and color cycling for pseudo-animation.

Thomson-CSF added frame-store to their Vidifont Graphics V; it now acts as both digitizer and paint system, with 32 colors usable per image, out of an on-screen palette of 2,000, out of a total of 16 million. And now, graphics can be sequenced on a "slide tray"; with two hard disks, the total frame storage capacity is 960 (the frame-store adds on for \$30,000).

Aurora added software to their AU/100 system. Most interesting is a 3D transformation that takes an object or screen area and rotates it on one axis. The system also now interfaces with Sony's BVH-2500 single frame VTR.

Lastly, but hardly least, Harvey Dubner may now be a subsidiary of Grass Valley Group, but the innovations continue to roll on his CBG-2. The system now does fully 3D solid modeling in three axes, with anti-aliasing to smooth out jagged line edges. The CBG-2 does not run images in real-time, but is the video equivalent of the sort of 3D high resolution graphics produced for films like *Tron*.

Still at the top of the heap are MCI/Quantel's Mirage, and Bosch/Fernseh's FGS-4000. Is any video graphics generator worth \$250,000? Well, they do more tricks all the time. New options for Mirage include the ability to compress and expand any sections of the live video image; and, even niftier, the ability to float point-of-view anywhere within 3D space in any image. The FGS-4000 already did this, so Mirage is just keeping its end up in the high tech TV sweepstakes. Bosch now ups the ante with instant 3D—to convert any 2D image to 3D, just "thicken." Bosch also incorporated a full-fledged paint system, to address an area in which Quantel had what they didn't. ■



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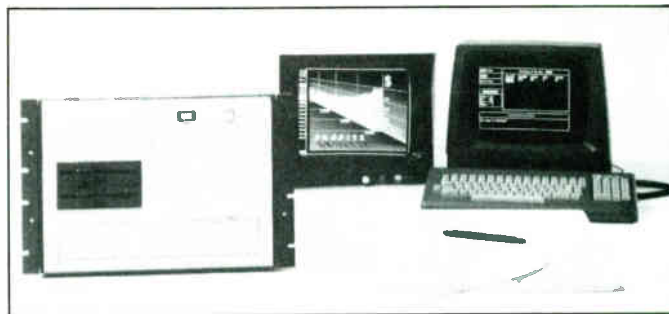
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distortion, perspective, enlarge and reduce, all instantaneously. It can generate 16.8 million colors with a working palette of 256. Full color editing is provided for varying hue, luminance, or saturation values of any selected color. Color cycling is also possible providing special motion effects. A handheld stylus and a 15" x 15" digitizing pad allows an artist to bring the brush style and color together. All images, color palettes, and brushes may be stored on standard 5 1/4" diskettes for later recall. Graphics can then be used for broadcast, video tape, 35mm slides, ink-jet print, 8 x 10 glossies and overhead transparencies.

The system will also input from a B&W camera with color separation filters for full color or an RGB color camera. Flat artwork, color photos, or 3D objects can be input. These images can then be reworked and manipulated. There is also a full library of high resolution type fonts available in various styles and sizes. Options include an RGB monitor, 46.3 megabyte hard disk storage, copy stand, high-resolution 8 x 10 film recorder, business graphics software, font composition software, and a second frame buffer.

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3M BFA Paint System

3M Company offers the BFA Paint System, a moderately priced computer-generated video graphics system designed to be operated by an artist rather than an engineer or computer operator. The system is menu-driven with an interactive, user-prompting monitor giving a detailed explanation of any operational mode. The system contains 28 resident brushes plus airbrush and a brush design capability. Other capabilities include image brush (rubber stamping), rotation,

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