

MIX

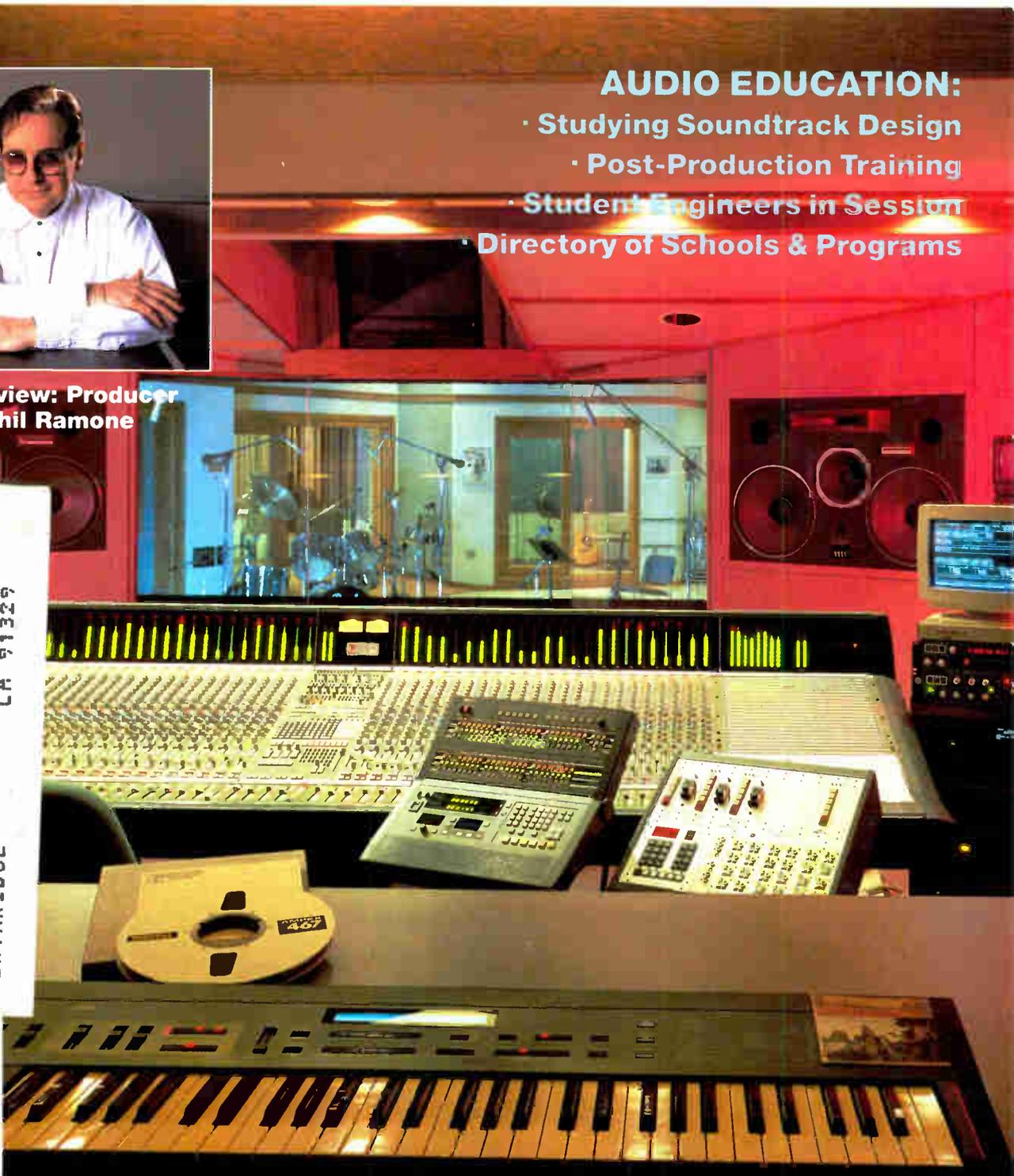
**Field Test:
10 Low Cost
Studio Microphones**
**Pacific Rim
Studio Listings**



**Interview: Producer
Phil Ramone**

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Jonnie Most seated at
Neve's VR72 Console with Flying Faders Automation
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Jonnie Most, Mixing Engineer— Representation: Richard Flanzer (212) 249-1999

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PROFESSIONAL RECORDING • SOUND AND MUSIC PRODUCTION

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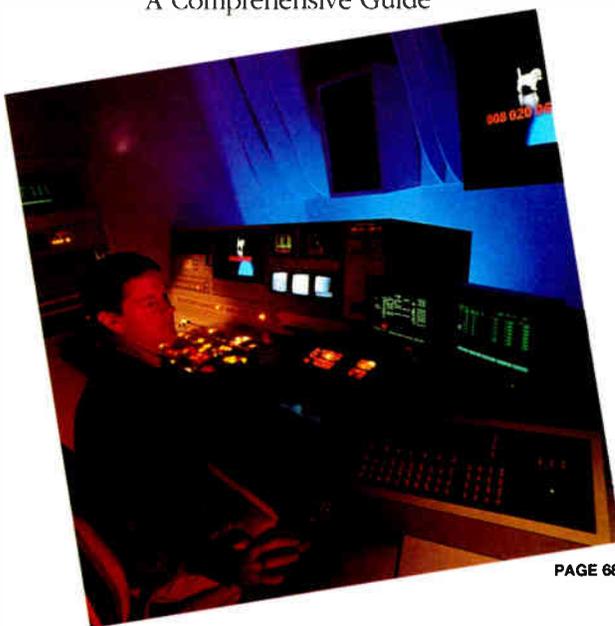
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Cover: Nashville's Soundshop Recording Studio has undergone a recent million-dollar renovation. The heart of the new John Storyk-designed Studio A is the Trident Vector 432 console equipped with Diskmix III Moving Fader Automation. Other equipment includes a Sony PCM-3348 48-track digital machine. Also available are 32-track digital and 24-track analog recording formats. Photo: Paul Wiegler

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Photo courtesy of Musicon Recording and Duplicating, Portland, Oregon. To book this state-of-the-art studio (including dual Studer A82-24 48-track analog recording and the Dvaxis 2+2 Digital Audio Workstation) for music recording and/or video post production, call 800/637-9493. FAX: 503/682-3043.

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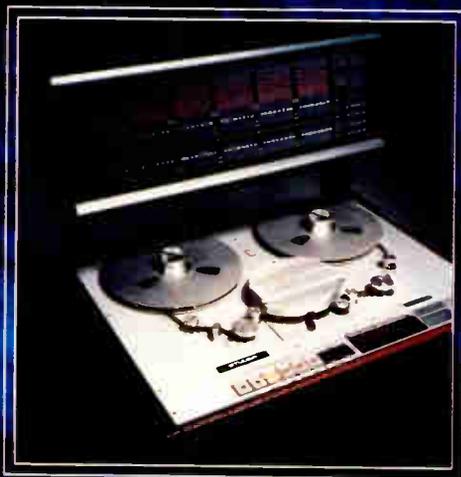
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FROM THE EDITOR

What does a recording engineer need to know to get a decent start in this industry?

In the past, certain personality assets such as having a "good attitude," the "ability to learn quickly" and "takes direction well" seemed to be the popular prerequisites for that first big job. In today's economically stressed times, though, those breaking into the studio engineering business must either be true artists in their crafts and/or have well-developed skills and opinions relating to sculpting sound, computer operation and business reality.

The pressure is on the new professionals to make themselves notable and somewhat indispensable. As the art of razor blade editing has given way to digital manipulation, more technical understanding is required of the entry level person than ever before. Knowing how the effects on a Zonusphere 1200B will enhance the wimpy guitar track, for example, may endear the new kid to the studio owner much faster than his or her ability to find the best sushi. And being able to assemble test gear to do a diagnostic check of the monitor system will all but guarantee job security. But above all, a rounded education in this ever-evolving industry's arts and sciences—music, audio, electronics, video, film, acoustics, computers and business—will be the hot drawing card for years to come.

The other side of the coin is that there is a larger universe of job possibilities than ever before. Now that television has advanced toward state-of-the-art audio, sound has grown to become a popularly exploitable element for films, and with multimedia products seemingly looming on everyone's horizon, there are many places waiting to be filled by educated people of sound mind.

New graduates this year will feel the cold reality of a trying economy and be forced to package and market their talents vigorously to find work. They will camp out on the steps of the major audio facilities, waiting for the big break—their dream come true. But many will also discover great jobs making films, TV shows and radio jingles, and move the art and science of sound into new and demanding applications.

This year's graduating students of recording arts programs are emerging with more collective skills and career tools than any before them. We challenge them to play an important role in the development of the recording industry, through their understanding of the technology and their enthusiasm for making things better.

Keep reading,



David Schwartz
Editor-in-Chief

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World Radio History

CURRENT

MultiMediaExpo in Review

The New York Hilton was the site of the third annual MultiMediaExpo, a three-day, 50-exhibitor event that attracted an estimated 5,000 showgoers. While the primary focus was on the *visual* aspect of multimedia technology (tinny sound repro systems abounded), audio showed an increasing profile.

Voyetra Technologies displayed a two-level set of application programming interfaces (API) and device drivers that can be used to add sound capabilities to DOS applications. The first level, the Voyetra MultiMedia Player, offers tape recorder-like commands and allows developers to add audio capabilities to applications, bypassing the low-level programming necessary to manipulate individual sounds. This API level controls an internal FM synth in a computer and supports external sound modules via MIDI serial commands, according to Voyetra president Carmine Bonanno. Other APIs offer FM sound synthesis and digital audio hardware. The APIs are intended for licensing to developers for a royalty fee of \$1.50 to \$5.00 per copy of each application sold, depending upon volume.

The Videologic VA-4000/Macintosh integrates digital video, graphics and audio into a single package. The system's audio capabilities include stereo with controllable fade, volume, bass and treble, and audio signals can be controlled independent of video and graphics.

3M was offering a CD-ROM evaluation package to allow potential users to evaluate prototype applications utilizing the technology. The \$650 fee will be applied as a credit if 3M replicates your discs.

Peter Blakeney, manager of market support for IBM multimedia products, notes IBM's audio capture playback adapter allows users to digitize audio to hard disk and CD-

ROM: "The intent is to supplement graphics and data and allow users to reinforce information through audio feedback." Regarding the level of priority audio is presently accorded in multimedia applications, Blakeney says, "Audio is but one of several functions integrated into personal systems. Audio, still and motion video, and new user interfaces all comprise multimedia. People think of multimedia as a thing; rather, it's a collection of technologies."

—Dan Daley

Stevens Buys Record Plant

It didn't take long. In March we reported that Record Plant L.A. was for sale after Chrysalis Group plc decided to close the doors. Now the facility is back, under the guidance of a new, hands-on owner, Rick Stevens, president of Summa Music Group. Rose Mann is back, handling booking and client relations, and Norm Dlugatch returns as chief technician. The re-opening was on June 10.

Stevens and key Summa shareholders have acquired the name Record Plant, all recording equipment, musical instruments, the two studios, furniture, fixtures and office equipment. Also included in the deal were the two remote trucks (one of which is likely being sold to Guns N' Roses, according to Stevens) and all gear from Livingstone Audio, a related equipment rental company. Stevens says he plans to close Livingstone and bring the vintage equipment back into Record Plant for client use.

"Acquiring a legend brings with it the responsibility to maintain essential elements of greatness and uniqueness that made Record Plant a legend," Stevens says. "Part of the 'new' tack will be to return to the heart and soul of Chris Stone's and Gary Kellgren's original client philosophy: to cater primarily to top recording stars and producers in a technologically advanced and com-

fortable, home-away-from-home surrounding."

At press time, architects and construction teams were busy with cosmetic makeovers. George Augspurger and Steve "Coco" Brandon were in checking the acoustic signatures of the two studios, while Dlugatch went over the electrical systems.

The Record Plant currently houses two large studios, one equipped with a Neve V60 with Massenburg automation and the other an SSL 4000 G Series. Within the next 18 months, Stevens plans to add a second SSL mix room, a second tracking room and a MIDI pre-production room. "From a business point of view, one key is to offer the 'big' room, while having the flexibility of the smaller and medium-sized rooms in the package," Stevens remarks. "That's the Record Plant formula."

1991 Mix Sound Reinforcement Survey

Mix conducted a subscriber survey recently of sound reinforcement professionals, 58% of whom are owners/managers of a SR company. Among the findings: The average respondent has been involved in the field for 12 years and works small to medium-sized venues (under 5,000 seats). Regional touring and support is most popular. The average expenditure for equipment was \$91,000 last year, and this year's most popular planned purchases are equalizers, house consoles and stage monitors. For a copy of the report, including the questionnaire, contact Elise Malmberg at (415) 653-3307.

Mark IV and Intelix Agreement

Mark IV Audio and Intelix, a Madison, Wisconsin-based electronic research and development firm, have entered a technology-marketing-product development agreement, covering the licensing of Intelix

INDUSTRY NOTES

Opcode Systems chose **Jim Montgomery** to direct the company's research and development division; the addition means Opcode founder David Oppenheim can concentrate more on product development...**Matt Ward** was elected to the position of training and product manager at Studer Editech. His responsibilities include operational training of domestic and international sales personnel...**E-mu Systems** welcomed **Michael Price** as vice president of engineering...**Symetrix** appointed **Jon Bosaw** as the national sales manager...**David H. Davies** will act as vice president of development engineering at **Ampex Recording Media Corp.** Davies is responsible for product and process development programs in the company's Redwood City, CA, headquarters and at the firm's Alabama manufacturing facility...**Framingham, MA-based Bose Corporation** announced two promotions: **Bruce Myers** is senior application and design specialist, and **Reed Strutzenberg** is senior sales representative...**Chris Yalonis** joined **Passport Designs** (Half Moon Bay, CA) as vice president of marketing...**Audio-Technica** now distributes all of their pro products in the Great White North. Interested Canadian pro audio dealers may call **Garry Elliott** or **Sally Fish** at (216) 686-2600 for details...**Tony Balboa** is the new southern California sales rep for **Lexicon**...**SMPTE** approved another student chapter of the Society. The 13th chapter is located at San Jose State University and is affiliated with the San Francisco section...**Mackie Designs** has moved to larger quarters and may now be found at 16130 Woodinville-Redmond Road #2, Woodinville, WA 98072...**Gauss Loudspeakers** appointed **Taub Sales** (Silver Springs, MD) as its sole pro loudspeaker representative in the mid-Atlantic region...**Horizon Manufacturing**, supplier of audio cables and accessories, moved to a new facility at 230 N. Spring St., Cape Girardeau, MO...The 1992 **SMPTE Television Conference**

changed its dates—revised conference dates are February 7th and 8th. The meeting place is still San Francisco...**Ann Kronen** was appointed vice president of product development at **American Interactive Media**. She will be based in the company's Los Angeles offices...**Quantel** moved to new digs in Darien, CT. The offices will house the executive and sales divisions, as well as the headquarters for the company's national service division...**Apple** purchased a 340,000-square-ft. building in Fountain, CO, and intends to open it this fall as the company's fourth manufacturing facility...**Chicago-based Switchcraft** named **Sharon Baldocchi** marketing manager of the components division...**AudioControl Industrial**, based in Mountlake Terrace, WA, chose **Jim Umstead** and **John Opal** of **AVCOM Inc.** as reps for the Ohio, West Virginia and western Pennsylvania territory...All sales and marketing duties for **Showco** have been assumed by **Robin Magruder**, senior vice president of sales and marketing, and **M.L. Procise III**, the company's senior sales executive...The **National Association of College Broadcasters** recently announced several new hires and promotions: **Glenn S. Gutmacher** is executive director, **JoAnn Forgit** is association director, and **Richard Smith** publications director...**Jack Boessneck** was named to the newly created position of director of sales and marketing of **Eighth Day Sound** (Cleveland, OH)...The **Broadcasting Department of San Francisco State University** is forming an alumni chapter. For more information and to get on the mailing list, write the **BCA Department**, San Francisco State University, 1600 Holloway Ave., San Francisco, CA 94132...**Equipment rental company Scharff Weisberg** formed an RF/wireless department; for further information, call (212) 582-2345...**FirstCom/Music House/Chappell** now represents **Sound Ideas Sound Effects**; call (800) 858-8880 for more information. ■

products. Intelix remains an independent entity.

Under the agreement, Intelix will assist in the development of computer hardware and software for Mark IV Audio products; manufacturing will take place at Altec Lansing's Oklahoma City facility. Also under the agreement, Mark IV purchased the Intelix MIND Control system hardware and application-specific software, which allows for the remote control and status indication of systems in hotels, conference centers, meeting rooms, broadcast studios, theme parks and similar installations.

European Photo/Video Expo Adds Audio

The biannual **Salon International Photo-Video-Son**, Sept. 27 to Oct. 2 in Paris, will add professional and consumer audio products for the first time since the exposition's debut in 1923. More than 300 exhibitors are expected, a small percentage of which will be audio companies.

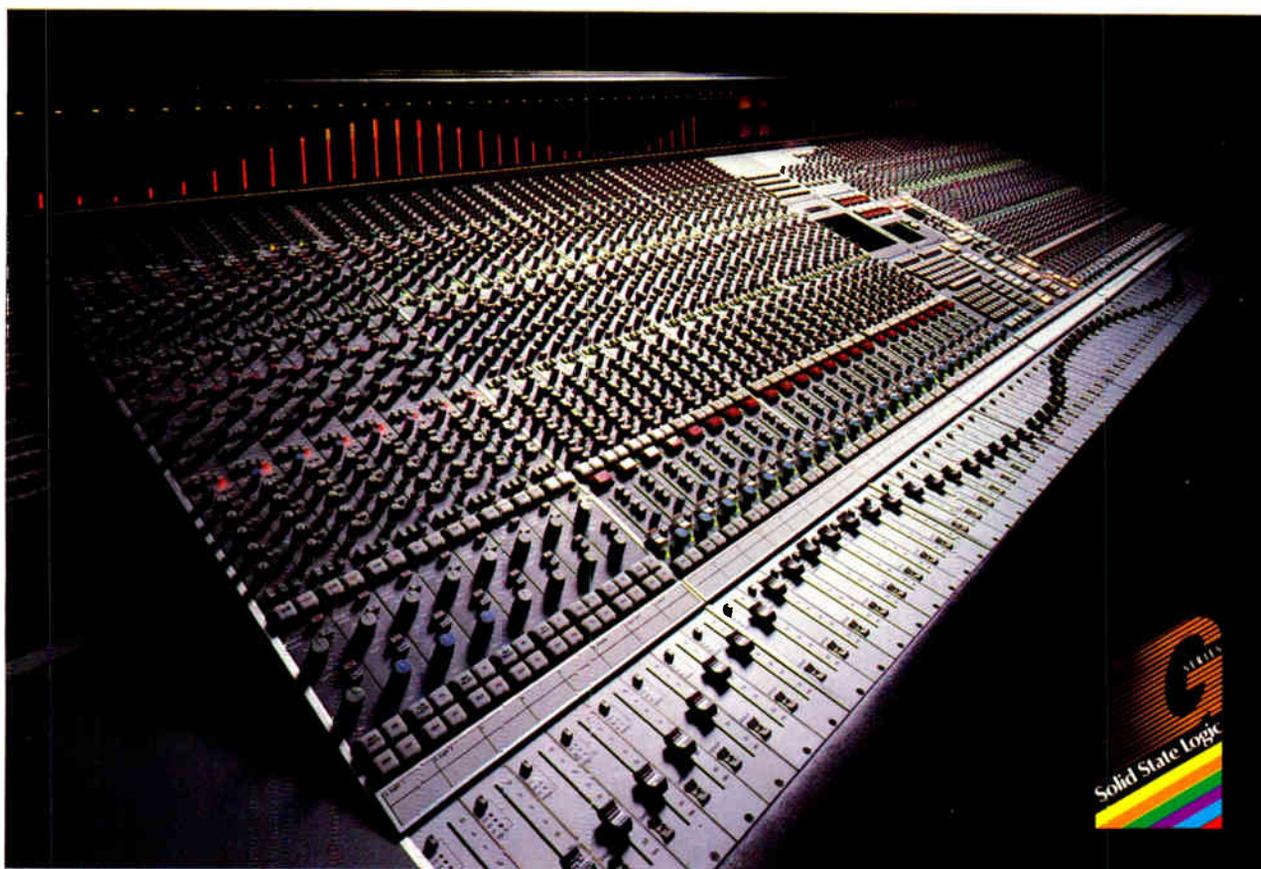
Audio manufacturers are not expected in large numbers because the **AES convention** in New York is the following week. Though a list was not available at press time, **Sony** and **French giant Thomson** are expected to head the list. "The problem is getting the American companies for the first time," says **Richard Perry**, the show's representative in the U.S. "We are actively soliciting them."

For further information, contact **Perry** at (201) 833-0331; fax (201) 833-4743.

Convention News

The **New Music Seminar** will take place in New York City July 13-17. Call (212) 473-4343 for seminar and performance information.

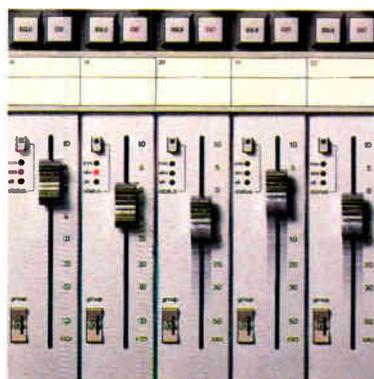
The **AES** announced its full program of technical papers, seminars, workshops and technical tours for the 91st convention, to be held in New York City October 4-8, 1991. This year's theme is "Audio Fact and Fantasy: Reckoning with the Realities." Call (212) 229-1991 or fax (212) 924-1243 for a list of papers and schedule. ■



Now the world's favourite recording console has added the ultimate moving fader system

THE SUCCESS of Solid State Logic's SL 4000 Series console is legendary.

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Called **ULTIMATION™**, this unique dual automation system has been fully integrated with the G Series console. It reads existing G Series mix data, and its commands are immediately

familiar to all SSL users. The system's unique dual signal path circuitry allows the engineer to select operation – either as a full feature moving fader system, or as standard G Series automation. **Ultimation** even allows moving faders to perform SSL-style Trim updates without resorting to complex subgrouping software.

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by Ken C. Pohlmann

THE WONDER CHIP THAT WORKS WONDERS

I am happy to report that the digitization of audio is proceeding on schedule. The compact disc has successfully and single-handedly saved the recording industry. Low-cost workstations using Macintoshes and other computers have brought editing and processing within everyone's reach. MIDI is triumphant. Third-generation digital video recorders are already appearing. The current generation of analog open-reel recorders will be the last: that format will be replaced by optical disc recording. Plans for digital audio broadcasting and digital television systems are coming along nicely.

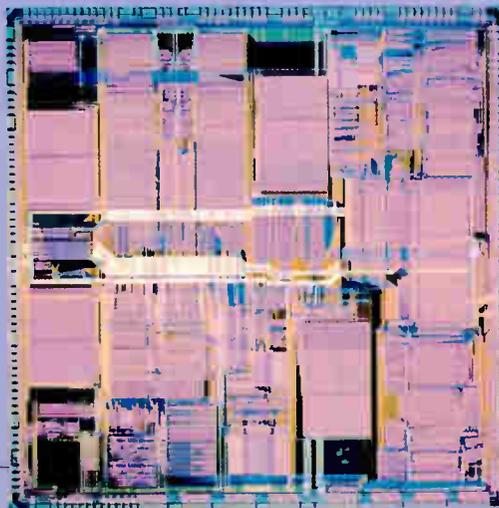
That is good news and bodes well for the survival of the industry. You see, until recently, audio technology was stuck in a 1950s Cold War mentality of big, dorky, monolithic machines and studios. That has changed over the past decade, with the emergence of a new democratization of the technology. In short, audio has crawled out of the primeval ooze and is ready to join other technologies that have already seen the light. In particular, the computer industry overcame monolithic thinking some time ago, and now that

audio has emerged we could see some real collaboration between the two.

Certainly the next generation of computers will embrace digital audio features. Whereas current computers are deaf and mute, new computers will employ aural cues such as speech recognition and synthesis. Conversely, the digital audio industry will embrace technology provided by the computer industry. Both of which will lead us to a true media computer.

Imagine a personal computer that combines all of your media needs in one chassis. Of course, it is a computer with typical word processing and spreadsheet capabilities. But it will also have superb graphical, audio and communications functions. It will support full-motion digital video, three-dimensional graphics, CD sound, speech recognition, and even facsimile and modem communications. Moreover, these features will be integrated by the next generation of software, which will take advantage of all these multimedia functions. This will smooth the human-machine interface by encouraging more effective interaction, and it will make the

Dubbed the Media Engine, Motorola's DSP96002 supports high-res graphics, motion video, computer animation and multichannel



one chip. Its throughput rate of 33 million words per second is the equivalent of moving 66,000 pages of text on and off the chip in one second.

If Bob Clearmountain didn't have so many good things to say about our digital multitracks, we might've had room for his picture.

It's not that Bob Clearmountain is shy. It's just that when you consider he's one of the most respected names in the recording industry, his reasons for buying a Sony PCM-3348 DASH 48-track look even better.

He bought it for the transport. "The first time I ever used a 3348, the transport was so incredibly fast and responsive, I was addicted to it immediately."

He bought it for its reliability. "I've never had any real downtime because of a Sony digital multitrack. Either the 24- or the 48-

Since it's the music that matters, the on-board sampler, internal track "ping-pong" and advance digital output let you be more creative.

track. And believe me, there are other machines that have cost me weeks of my life."

He bought it for digital editing.

"Editing on the 3348 is unbelievably quick and easy. I can edit and re-edit without destroying an original take. And that leaves me an infinite number of options."

He bought it for creativity. "Sony's multitracks create an atmosphere where you can just let it all happen and have nothing get in the way. That really makes for better music and

even better records."

He bought it for the sound. "The 3348 sounds fantastic. Everything I record sounds exactly the way it



The PCM-3348 has a truly unique transport mechanism. Its predictable response, consistent reliability, and incredible speed actually make the 3348 a lot of fun to use.

went in, no matter how long I work with the tape."

And he bought it because he wouldn't consider buying anything else. "I don't think there's another machine that even comes close to the 3348."

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This is the key to the Tannoy cabinets. If a 'rigid' cabinet

is used, the redundant energy from the rear of the bass unit and frame cause endless resonance problems within the cabinet. Differential Material Technology provides the answers by using a variety of different adhesives between the rear of the drive unit and brace, the cabinet walls and the brace and within the layers of the MDF laminate.

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computer an all-in-one workstation with the ability to perform tasks that currently require a roomful of specialized equipment.

The future computer will incorporate a CD recorder. It would be an easy matter to enter in parts of a recording, edit them, apply any processing that is required, and write a finished CD for personal or professional use. The task will be further simplified by use of voice commands.

Similarly, digital video could be captured from CD-I discs (discs with 74 minutes of full-motion digital video and digital audio soundtracks have already been shown) for video editing and processing. Using the Kodak CD-I Photo system, you could take snapshots off the CD and use the computer as an electronic darkroom to store, modify or print photos. In short, the computer would be a complete multimedia production center. You could use MIDI instruments to create music, record and edit it, and generate a CD complete with liner notes and full-color photographic cover. Initially, the computer will be affordable only to professional users, but as prices drop, small businesses and home users will follow.

Now here's the really good part: Most of the elements comprising such a multimedia computer are already available. High-capacity optical disc recorders, high-resolution screens, color laser printers, and audio and video interfaces are all available and affordable. Likewise, microprocessors, RAM and hard disks pose no problems. Indeed, systems such as the NeXT computer have demonstrated the viability of a multimedia computer. However, image and audio processing are computation-intensive, requiring processing and movement of huge quantities of data.

Although DSP chips such as the Motorola DSP56001 (as used in the NeXT computer and audio workstations) perform well, an entirely new generation of digital signal processing devices is needed to handle the load. Such a media processor must be able to efficiently perform all the audio, visual and communication computation chores. It must have a high degree of parallelism to effectively perform simultaneous tasks (such as processing audio and video files). It must balance performance with I/O to avoid any

bottlenecks. In short, such a processor must be designed specifically for multimedia signal processing tasks and be as powerful as hell.

Such a chip—the key to the next generation of multimedia computers—is already here. It is Motorola's DSP96002 processor, dubbed the Media Engine. It supports fast, high-resolution graphics, full-motion video, computer animation, and multichannel digital audio on one chip. This 223-pin device is a 32-bit, floating-point DSP chip that far exceeds the performance of the powerhouse DSP56001 chip, with increased speed, dual input

and output structure, and compliance with the IEEE standard for floating-point math—the standard used in mainframe and supercomputing systems.

The DSP96002 has a clock rate of 33 MHz with a speed of 16 MIPS (million instructions per second). For example, the DSP96002 can execute a 1024-point Fast Fourier Transform in less than 0.8 milliseconds. The instruction throughput peaks at 165 MOPS (million operations per second), and 50 MFLOPS (million floating-point operations per second), because several operating instructions can be per-

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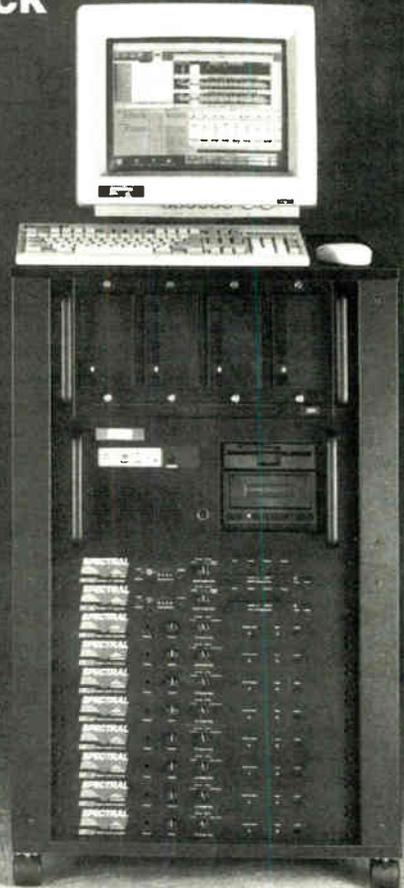
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formed with one instruction. Thanks to its parallelism, the CPU would perform the following operations: IEEE floating-point multiplication, IEEE floating-point addition, IEEE floating-point subtraction, DMA transfer, load two registers for subsequent calculations, calculate address for two new pieces of data, and calculate source and destination addresses for the next transfer—all in less than 60 billionths of a second.

There are five separate data buses, three address buses and a program instruction bus, all 32 bits wide. The

buses provide a total internal bandwidth of more than 2 gigabits per second. There are ten 96-bit registers in the ALU, which can be used as 30 32-bit registers. The ALU supports integer arithmetic, including 32x32 multiplication with a full, non-truncated, 64-bit product. The DSP96002 has six on-chip memories, and can directly address up to 12 gigawords of memory. Moreover, multiple DSP96002's can be linked to form processing arrays.

Of the chip's 223 pins, 162 are devoted to input/output communications. There are two identical input and output ports, each providing a 32-bit data path, 32-bit address path, and 19

control and handshaking lines. These ports are bidirectional and can operate independently while computation continues. For example, one port could transfer video data and the other could transfer audio data, both in the background of other real-time processing. Anyone who has sat around waiting for a file to transfer will appreciate this.

Overall, throughput is 33 million words per second; this is equivalent to moving a 66,000-page report on and off the chip in one second. The DSP96002's fast-interrupt function is especially important for audio processing. It permits the chip to immediately take up a new task without storing information on the current task. The CPU can process over 2.78 million interrupts per second. In other words, its I/O capability will keep the Media Engine fed with data.

Aside from its hardware clout, the DSP96002 is programmer-friendly. Its programming model is virtually identical to the DSP56001 with MCU-like mnemonics, and DSP56001 software can be ported to the DSP96002. Moreover, DSP96002 software can be re-touched to run on the DSP56001. The DSP96002 contains an on-chip emulator, which is accessed through a special set of pins. Third-party compilers enable programming in high-level languages such as C, and there is even a third-party, real-time operating system.

Back in the old days, it was easy to tell when a person was into computers. You could spot their buck teeth, slide rules and thick glasses from across the room (just kidding, folks), and if you got any closer you could hear them talking about chips—8080, Z-80, 8085, 6800 or whatever. In contrast, hip audio people felt secure in their discussions of pinch rollers, head alignment and tape tension.

As it turns out, the dorky computer people knew exactly what they were talking about: They knew the future of computers lay in chips. Now that digital audio has irrevocably merged audio with computers, the hip guys better wise up. Like it or not, the dinosaur days are over; new computer technology like the Media Engine is going to blow open the studio doors. ■

Ken Pohlmann's house has more computers than forks. On the other hand, both his motorcycles must be kick-started.

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World Radio History

by Stephen St. Croix

WHAT IS GOING ON NEXT DOOR?

I am sitting by the pool at some silly hotel shaped like a giant riverboat, deep in the heart of the United States' most shining example of what the true utopian city of the future *could* look like if we all try real hard: Las Vegas.

— What a place! People still *smoke* here! I guess it's only fair though; this *is* a city of gamblers.

I'm, theoretically, here for the NAB, but it doesn't seem to be here for me. The first two days were pretty active, but then...Well, I guess there must have been a misprint in some of the literature, because it seems that many of you thought the show was only two days long. (Don't get me wrong; you're right. It was.)

Now don't worry, this column is not about NAB—others have already reported on that. I am only telling you where I am writing from so that you will not be upset if the column suddenly, without warning, ends. You see, I am writing on a four-year-old NEC portable, made before they invented batteries that actually worked. So, if I suddenly stop, please don't take it

personally. My batteries just ran out.

I have seen some evidence here (well, not actually here at the pool) of what some of you may have noticed at the last AES convention: a trend toward personal and project studios.

This is a sensitive topic for some, because as the trend continues—and it seems it will—the business of recording and editing audio, along with the supporting business of inter-industry marketing, will undergo some significant structural changes.

Let me start with a mini-historical recap: Most of us grew up in the commercial studio environment. The majority of work was done in major (or at least commercial) studios, facilities that rented time. Manufacturers and equipment dealers then evolved to service this type of structure. Decades of competition culled dealers, studios and humans alike, until we achieved a certain amount of stability.

The best engineers, producers, studios, production facilities—even dealers and manufacturers—survived

—CONTINUED ON PAGE 23

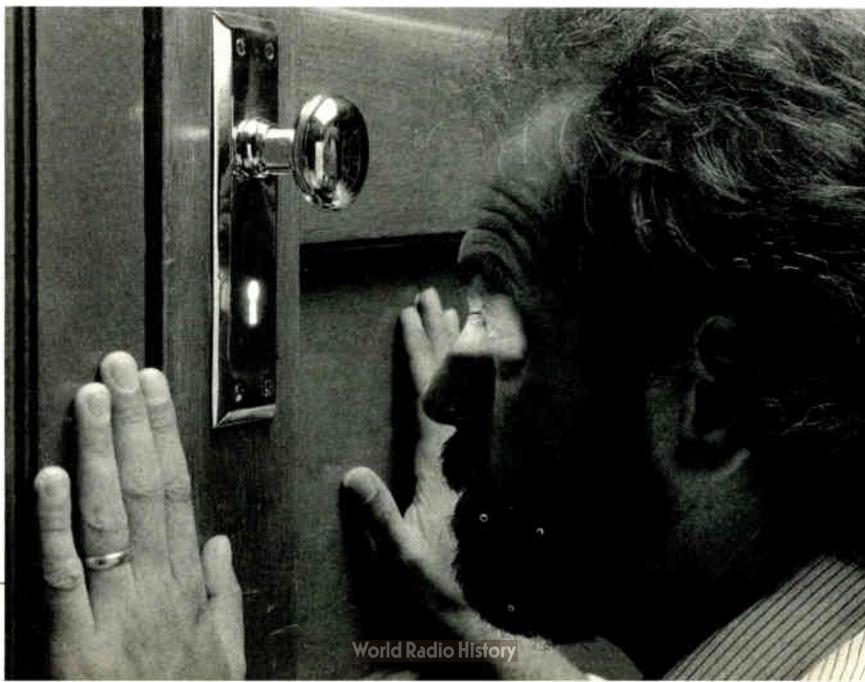
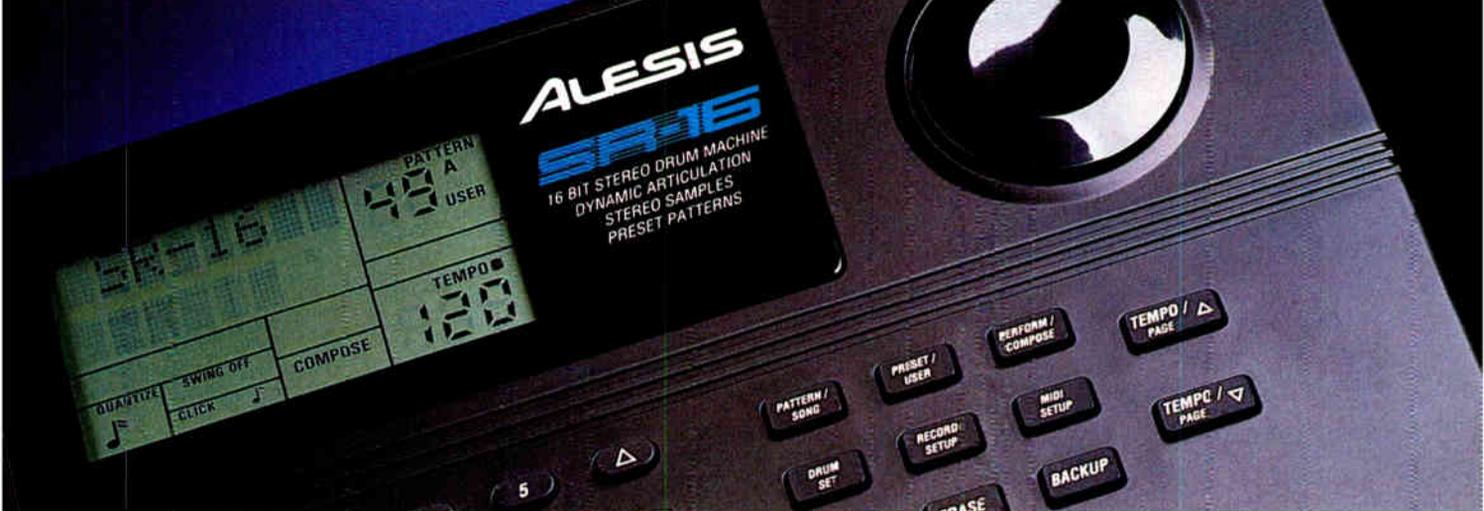


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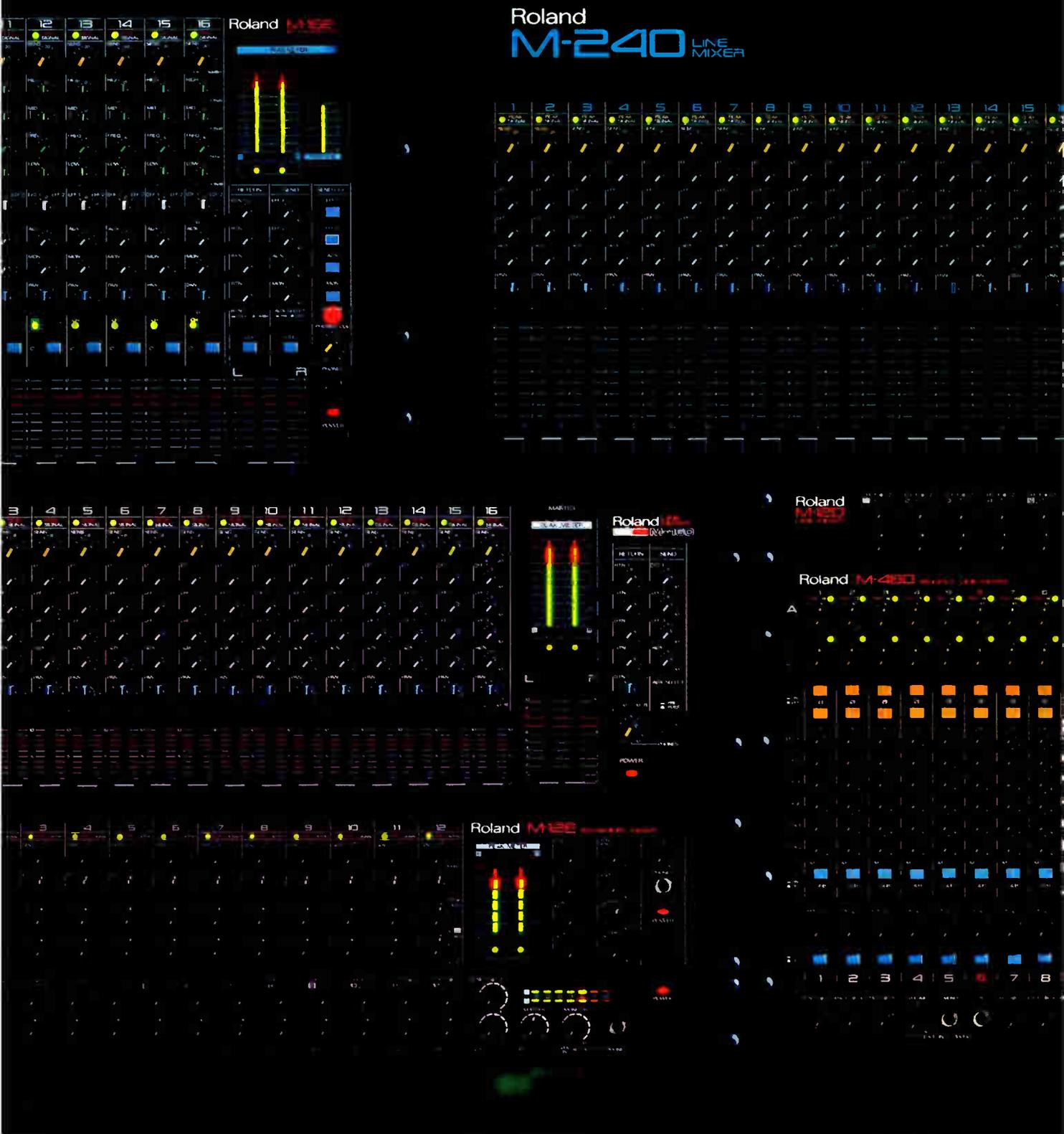
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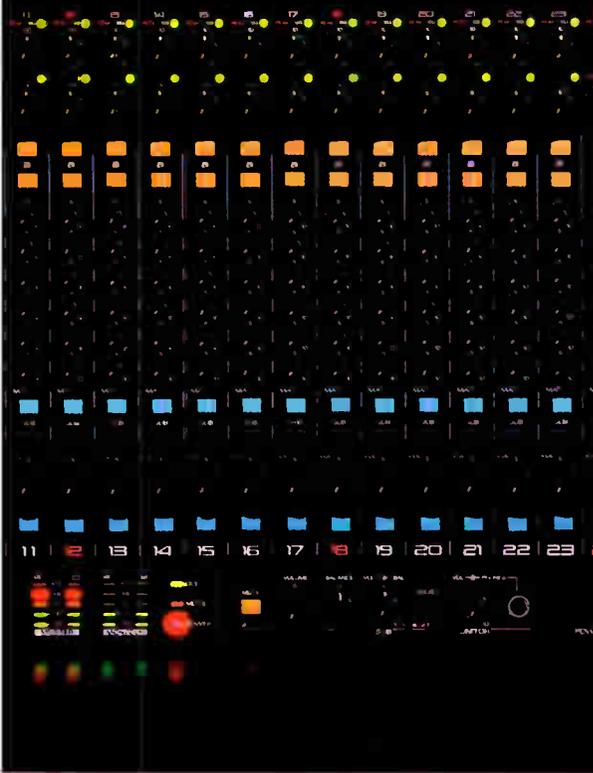
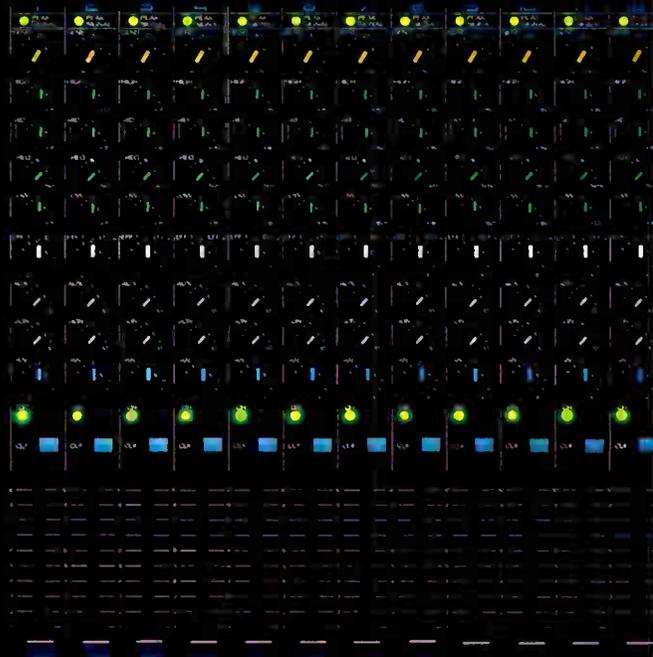
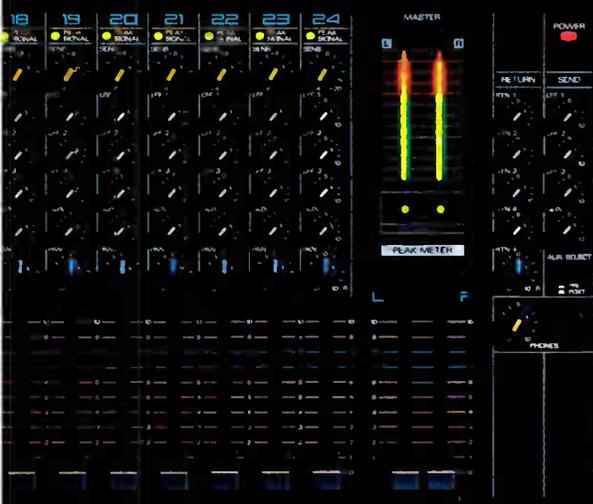
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World Radio History



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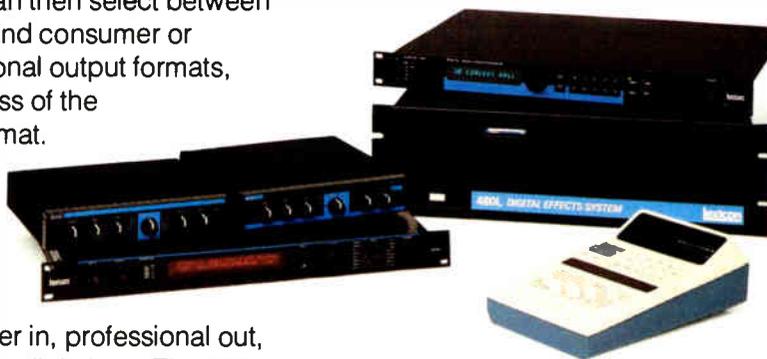
The 300 is a powerful tool in audio for video applications where time code synchronization is essential. And in digital video editing, the 300 ensures that scene changes are handled smoothly — in the digital domain. Because the 300 has digital inputs and outputs, it's the perfect choice for RDAT and CD mastering. And for music production there is an incomparable set of sounds, as you would expect from Lexicon.

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and shot it out for top-dog positions. Very nice. Very American.

Then came the first recession to significantly affect the entertainment industry in the U.S. Where there once stood several hundred studios now stand a hundred, and in many areas, mere tens, sometimes even fewer. Not so nice, but still very American.

Because of this attrition, concepts that were once far too bizarre or too chancy to be taken seriously are now being received in quite a different light.

If the need to tighten one's belt (while simultaneously improving performance) isn't a sign of the times, I don't know what is. This same condition forced car companies to reduce emissions by 25 times, while actually *increasing* performance. It looks like it's *our* turn now.

Private artist studios—a concept that until recently was generally felt to be out there with private jets, entire floors of expensive hotels and Lamborghini Diablos—are now appearing with great regularity in a neighborhood near you. Check your local program guide for listings.

Project studios and privately run and operated production houses are appearing everywhere now. I have operated a totally private facility for 12 years now. We track and mix music, do film scoring and some production work. We have all the latest cool stuff, but we *don't* have customers. Customers who actually come in and rent the place, I mean. Our studio is simply not for rent. Clients send us whatever is needed for a project, and we send masters back, and that's it.

Obviously, all of this is changing the way business is done. Instead of a local market having, say, seven large production studios, there might be three megastudios and ten or 12 of these dedicated project studios. Many of these new private facilities are quite hungry.

This offers a much wider range of price, production power and skills than before. It also means that customers today should take the time to look into these alternatives if they truly want to optimize.

In many cases, the operating overhead of these dedicated facilities is *much* lower than the "legitimate" or "pro" competition, and the above-mentioned desire to eat often causes

the owners to pass this dramatic savings on to customers. We all expect to pay for tape when we do a project, but nobody likes feeling that he or she has paid for *red* tape. It is no surprise that the majors are quite unhappy with their appearance on the scene.

The customer today is awakening to the fact that there are two sides.

The full-tilt houses typically offer a considerably longer history of operation, which safely can be translated to more raw real-world experience in many cases (but, of course, not all cases).

If one has a project with a lot of slipped code or other conforming nightmare, one of the big boys might be a good bet, though the chances are that you will pay dearly. If you need a TV show assembled by tomorrow, it might be worth the bucks to hand the job over to a major player, if for no other reason than peace of mind. You know that they probably have much more capital investment to protect, not to mention the all-too-critical state of reputation. It can be quite comforting in a pinch to know that a large, well-established, major brand-name production facility will pump in all of its resources to get a problem job done for you on time.

On the other hand...

What about these new guys? Why should the big boys be so deeply upset at their emergence on the scene? Upset enough to lobby for laws to stop them? Should we perhaps take a look at what this alternate "underground" has to offer—whatever it is that so scares the establishment? Nah. Well, wait...that's not it. Yes. Yeah, *that's* it; yes, maybe we should.

All of the Japanese manufacturers and several of the European and American manufacturers have been spending the last several years methodically plotting to blur the distinction between the "professional" and "semipro" classes of recording gear. In addition, all of the major manufacturers that supply transports, tape decks, VTRs, DATs and all such devices have been working heavily on what was once clearly labeled as "consumer" products.

Even though in most cases the data interfaces are not the pro standards, the features often *exceed* what we are offered in true pro gear. Yes, the internal mechanical assemblies may be a bit lighter, but even that isn't always true. The one thing that *is* always true is that

these machines can get you online for a small fraction of the price of the established pro models.

If someone is clever enough, buys the proper combination of trick pro and semipro gear, sets a place up right, and actually knows what to do (maybe they recently left a major studio to begin their own home or project facility), they can deliver, and they can deliver for a lot less.

To complicate matters even more, now there are small private facilities that specialize in certain types of work, often doing a much better job than the majors. In these cases, they may or may not cost less—some I know of actually cost more—but they reliably deliver specialized projects faster, with far superior results.

To complicate it all even a bit more, the development of the workstation concept, and now the new virtual studio concept, is changing the market. It may be quite reasonable for a private facility to invest 50 to 200 grand in one of these machines, instead of the typical half-million-plus (plus and plus) that usually goes into a recording console, signal processing boxes and a couple of digital multitrack machines.

With the newest in DSP-rich virtual studio systems, you need only a quiet room, one major toy and a couple of monitors to be online. If the engineer knows what to do, he or she can be formidable competition to the top dogs within days of starting up—with product throughput much faster, and often delivering higher quality to boot. Some of these places exist already and are a lot more competent and impressive than you might imagine. No wonder the big commercial studios (and the manufacturers that produce traditional heavy hardware for them) are so worried. Times, they are a-changin'.

Epilogue: You may have noticed a sort of psychotic pattern of alternating viewpoints in this column. So did I. It is essentially impossible to write about this trend and come out of it in good shape politically, so I tried for the next best thing: artificial neutrality. I do feel strongly that now is a time when customers and facility operators alike had better take a real close look at a fundamental shift in the very nature of our business. ■

Stephen St. Croix has written for sci-fi, dive, bike, car and gun magazines, several newspapers, and has penned two long-running comic strips.

by Mel Lambert

TRAINING FOR THE FUTURE

SPECIALIST SKILLS FOR FACILITY OWNERS

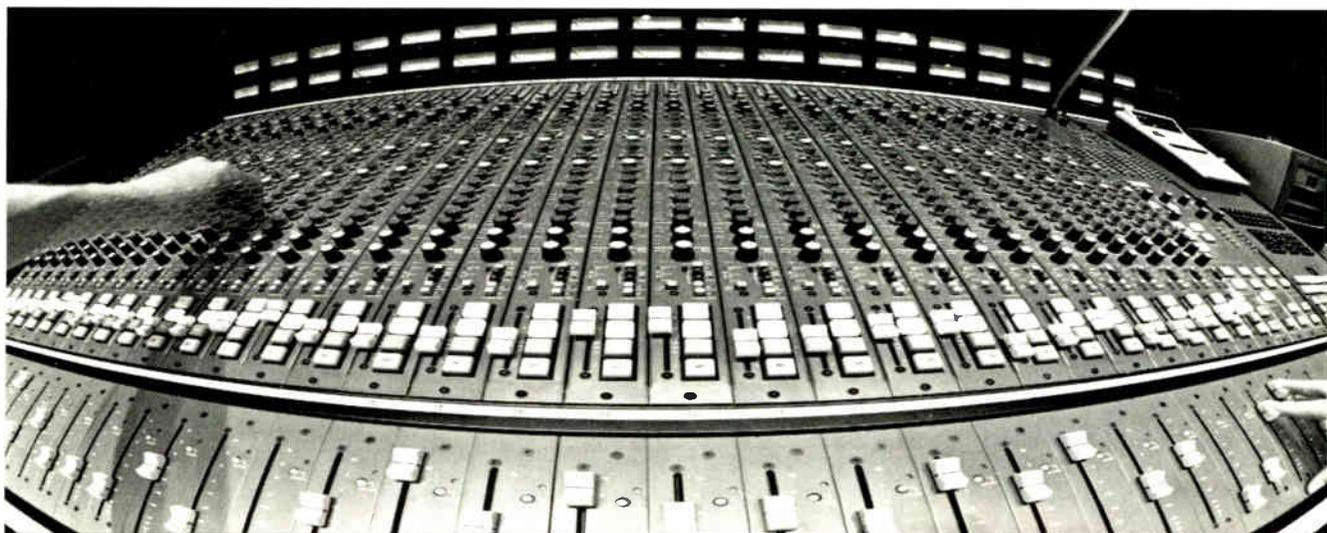
Ours is very much a people-oriented industry, one in which interactive and communication skills are as important as technical proficiency. Such interpersonal abilities are difficult to teach. One either has an innate ability to get along well with people, or one doesn't. And while almost all of us possess a basic willingness to cooperate and function well in a complex society, it is the studio manager's special challenge to develop a staff both competent to today's technical demands and sensitive to the human factors that drive our business.

With many studios making the transition from conventional audio to

diversified audio-for-video, how does an employer implement a training schedule for the production and technical staff, while also involving them in the decision-making processes that are the lifeblood of a facility? How does one seek out and develop the highly motivated, talented and creative types of people that give any business a definite edge over the competition?

Securing a viable future for any facility involves three important steps: hiring the right people, training them in the skills they will need to carry out their duties, and ensuring that they remain up to date in the varied technical and operational tasks required for

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the facility to remain competitive.

Hiring the Right People

Motivation is the key to your interaction with new staff and your ongoing relationship with them as employees. Look for people who have a basic understanding of the audio *and* audio-for-video technology—and the enthusiasm to learn from you and your staff. Your sense of humor and understanding of when to listen will assist with integrating new members of your crew into the existing staff.

If you are looking to hire and must choose between two individuals who possess roughly the same technical skills, my vote goes to the person who shows an aptitude for self-improvement. So many skills are learned on the job that the willingness and ability to grow *into* the position cannot be over-emphasized. Naturally, he or she should have a good handle on the enhanced audio-for-video mixing skills, to make themselves more valuable to you and your customers.

Training The Staff

A good facility manager needs to ac-

knowledge that all members of the staff should undergo regular training. In this fast-moving world, developments in time code synchronizer designs, for example, or digital mix-to-picture technologies, mean that all of us can benefit from regular refresher courses on hardware operation, features and functions.

Gaining access to this information is not too difficult. There are several excellent textbooks available (check out the Mix Bookshelf, for example) that describe the basic functions of contemporary audio and video equipment, how it should be interconnected, and how to use it creatively. The trade magazines provide regular tutorials in recording and production technologies, along with profiles of people and facilities to show how the other guys handle various operations. These should be ordered, subscribed to and circulated among the staff on a regular basis, with key articles being clipped, copied and posted.

The hardware manufacturers also produce a great deal of useful information, including, of course, instruction and operator's manuals (instant knowledge), specification sheets (information on improved features, operational advantages and even industry standards and references), and newsletters (providing product-specific hints, things to watch for, and tips from similar facilities). While such material may lack the objectivity of magazine articles, much of what manufacturers have to say about their own hardware is very informative.

Regular classes in the control room might not always be practical, but a great deal of information can be disseminated by holding formal technical briefings whenever a new piece of hardware is installed. Even office and scheduling staff like to be involved in the day-to-day activities of a busy studio, so include them. Their enthusiasm about having been involved and/or consulted will be reflected in a more positive attitude about the studio and its services.

Keeping Them Up to Date

The speed with which new technical advances are sweeping through our industry is truly breathtaking. Keeping up with all of these developments can be a full-time process. Besides the industry trade magazines and newsletters, the regular AES, NAB, SMPTE and other industry conventions provide an

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open forum for information on emerging technical developments. Many areas of the country are now hosting scaled-down, regional trade shows (organized by local facilities, schools and manufacturers), in an effort to bring manageable information down to the local level.

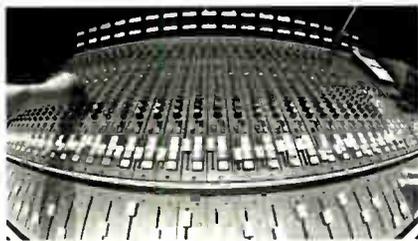
Many aggressive companies in our industry organize training seminars and "get to know us" receptions on their new workstations, synthesizers or mix-to-picture consoles, for example, without obligation to purchase. Many of these manufacturers also work closely with recording schools to build learning programs around their complex products and new skills needed for their operation. It may be worthwhile to check the schools in your area for courses that offer this kind of specific information to you or your staff.

Marketing Your Facility

Hiring and developing an outstanding staff is your best primary step to creating a successful facility. But their knowledge of your studio's hardware is only part of the equation for a successful facility. What about attracting new business, as well as marketing

your existing services?

My advice would be to familiarize yourself, and your staff, with the basic principles of public relations, direct/business-to-business marketing, targeted advertising, and the other skills necessary to promote your facility



**New technical
advances are sweeping
through our industry with
breathtaking speed.**

within the local, national or international marketplace. You might also try some *pro bono* work for worthwhile community organizations in order to get your facility's name out there.

If you are contemplating a move toward diversification, such as adding a MIDI-based pre-production room, CD mastering shop, or even an audio-for-video/film remixing stage, it might be worth involving your staff in a basic marketing survey. It's the best way to get a firm handle on the types of services required by your targeted customer, and how those requirements might change and develop over the next two to five years. It will also make your employees aware of the real client world in which you operate.

As with all management skills, running a successful facility means first understanding the market's requirements, and then satisfying those demands with the right combination of well-trained people and appropriate technology. In these rapidly changing times, we need every advantage we can get to remain viable. ■

Drawing upon over 15 years of active involvement with all dimensions of professional audio on both sides of the Atlantic, Mel Lambert now heads up Media&Marketing, a high-tech consulting and marketing service for pro audio firms and facilities.





Studying the Art of Soundtrack Design

The creation of a motion picture soundtrack is—or at least has the potential of being—an art as well as a craft. Especially within the context of narrative feature filmmaking, it is a process that involves a tremendous amount of selection, gathering and orchestration of individual sound elements, which must then be mixed together carefully to create a coherent whole.

When it comes to getting training in such a complex and creative discipline, *experience* may indeed be the best teacher. But how do you get the necessary experience in a business that, as veteran re-recording mixer Bill Varney points out, “doesn’t give you much room for practice”?

Sound designer Walter Murch notes a further complication: “There is no ‘way’ to get into the film industry.” That is, unlike many professions, there is no sanctioned training ground that necessarily provides an entree into the field. Each person must find his or her own opening, the proverbial “foot in the door.”

Although having a diploma in hand certainly doesn’t guarantee that the door will swing open any more easily, getting a thorough pre-professional education, which includes both a technical and aesthetic dimension, can be an important step toward your professional goals. Getting *through* the door is only part of the problem, however. What skills and abilities will you need to have once you’re on the “inside”? How much of this can you learn in school?

These questions were posed recently to several prominent professionals: Ben Burt (*Star Wars*, *Raiders of the Lost Ark*, *E.T.*); James G. Stewart

BY JOHN MICHAEL WEAVER

PHOTO BY MICHAEL LLEWELLYN

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Designing a Scene

Walter Murch talks about his own approach to the creative process of soundtrack design:

"You have to look at a scene and break it down into field [distant, diffuse, atmospheric sounds], midground and foreground, because you can't record everything all together. You can't record the footsteps with the jet planes in the right perspective at the same time. So, the first, most important step is to break down reality into layers that can be manipulated. Once you start thinking in layers, then you will know how to separate things out. Once they're separate, they are free-floating, and you can replace the obvious with the not-so-obvious.

"When you first think about a scene, your tendency is to be more literal. But the more you look at it from the side, rather than confronting it directly—once you have that 'lateral vision,' rather than 'literal vision'—you can come up with things that are very unlikely, yet you put them in and it seems to work. It works because, if it's a well-chosen sound, the audience (which includes yourself) responds to it, both because it does resonate with something that is going on inside the characters, and because it's reasonable that this sound would be there."

Murch describes a scene from *The Godfather* to illustrate this point: "Just before Michael kills McCluskey and Sollozzo, by far the loudest thing on the soundtrack is this incredible screech, which is in no way explained by anything that you've seen up to that point. It happens to be the sound of an elevated train going around a corner, but we've never established that there are elevated trains [present], other than through sound. Yet, this wave of sound comes and goes and comes back and gets even louder, then gets eliminated as soon as he pulls the trigger. In a literal sense, maybe down the street there was an elevated train that we didn't see when we pulled up to this restaurant, but you really have to stretch the fabric to say, 'Okay, I'll buy that.' On the other hand, this sound very accurately described what was going on inside this kid's head as he was about to murder someone for the first time in his life, up close: the screeching and the raging of the brain. 'Should I do it? Should I do it? Yes! BANG!'" ■

PHOTO: PETER DA SILVA



Left: Walter Murch works out of his Chinatown office in San Francisco, doing free-lance editing for Hollywood films.

(*Gunga Din*, *The Hunchback of Notre Dame*, *Citizen Kane*); Bill Varney (*The Black Stallion*, *Raiders of the Lost Ark*, *The Empire Strikes Back*); and Walter Murch (*The Godfather*, *The Conversation*, *Apocalypse Now*). All have re-

ceived Academy Awards for their work in film sound.

Storytelling, Creativity and Learning to Listen

First of all, the study of soundtrack design is essentially an inquiry into how to help tell a story with sound. If there is one thing the top people working in this field have in common, it is that they possess strong storytelling

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Left, James G. Stewart, c. 1937, on the RKO re-recording console he helped design, later used on *Citizen Kane*. At right, Ben Burt at work for Lucasfilm Ltd.



PHOTO: HALINA KRUKOWSKI

instincts. Ben Burt says, "I think that any artist who participates in the film-making process—an artist who is going to get recognized as such—is one who appreciates the overall purpose of the movie. In other words, they're first and foremost supporters of the film as

a total piece of drama, or whatever the goal of this film is. We love the movie, and we say, 'What can I do personally, with my own skills, to make this story better?' That's what appeals to us, that challenge."

Secondly, someone who aspires to make the kind of creative contribution Burt refers to needs to possess technical expertise *and* an aesthetic point of

view. Varney notes that a director "will often let you present a scene to them in whatever way you feel it's going to work, and then he or she makes the final decision."

Recommended Reading

The following books contain food for thought for people interested in soundtrack design:

Film Sound: Theory and Practice, Elisabeth Weis and John Belton (Columbia University Press, 1985). Very useful collection of articles and book excerpts.

Sound and the Cinema, Evan Cameron, ed. (Redgrave, 1980). Collection of extremely informative essays, including one by James G. Stewart. Out-of-print, but available in libraries and worth tracking down.

Sight, Sound, Motion: Applied Media Aesthetics, Second Edition, Herbert Zettl (Wadsworth Publishing Co., 1990). Contains an extensive discussion of sound's role in film and television.

Moviemakers at Work, David Chell (Microsoft Press, 1987). Includes long interviews with Bill Varney and Chris Newman (*The French Connection, Amadeus*).

Working Cinema: Learning From the Masters, Roy Paul Madsen (Wadsworth Publishing, 1990). Contains a chapter on sound design written with Walter Murch.

Gaffers, Grips and Best Boys, Eric Taub (St. Martin's Press, 1987). Incorporates discussions on film sound with Jeff Wexler (*Coming Home, Being There*) and Frank Warner (*Taxi Driver, Close Encounters of the Third Kind*).

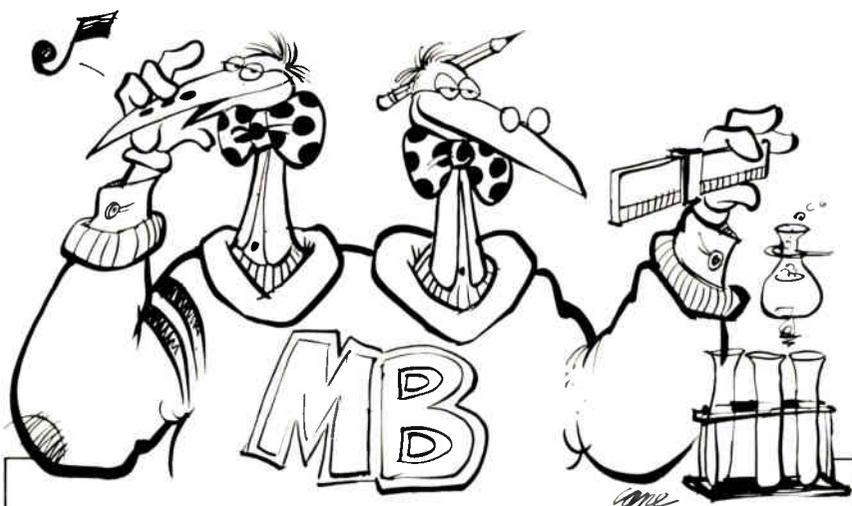
The Art of the Sound Effects Editor, Marvin M. Kerner (Focal Press, 1989). Both theory and practice are covered.

Sound Effects: Radio, TV and Film, Robert L. Mott (Focal Press, 1990). Addresses history, concepts and methods.

Film Music: A Neglected Art, Roy M. Prendergast (W.W. Norton & Co., 1977). Explores subject from an historical and aesthetic perspective.

The Responsive Chord, Tony Schwartz (Anchor Press, 1975). Classic dissertation on sound's communicative powers.

The Power of Myth, Joseph Campbell (Doubleday, 1988). Valuable insight into the art of storytelling.



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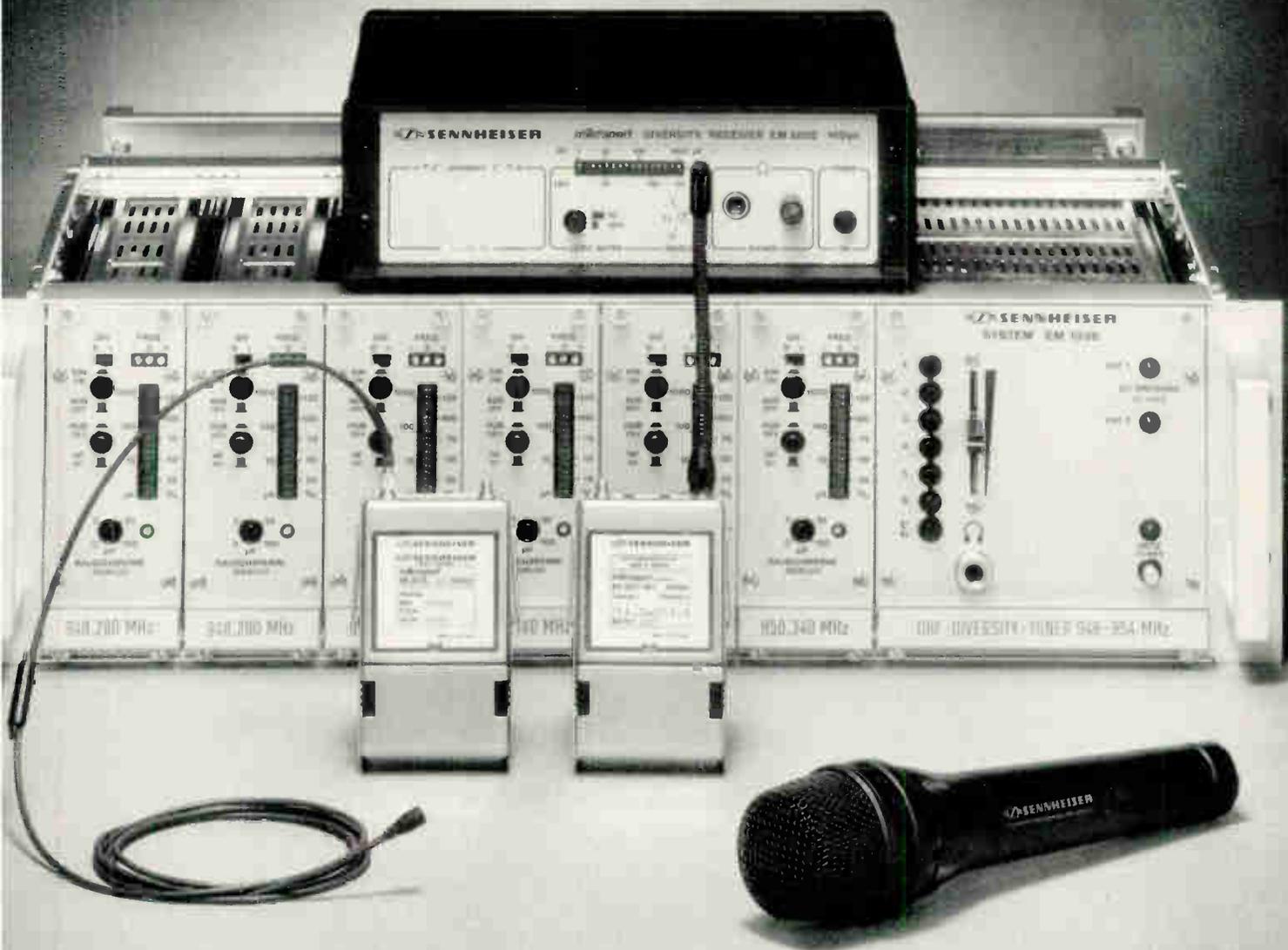
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Bill Varney, MCA/Universal's vice-president of Sound Operations

At the same time, you shouldn't expect to be able to flex your artistic muscles on every project. James G.

Stewart, one of Hollywood's most experienced and accomplished soundmen, says, "The opportunity for creativity doesn't present itself unless you have a producer or director who appreciates that sort of thing and understands it."

Finally, as frustrating as it may be to those looking for easy answers, there are no formulas or universally accepted principles to rely on when it comes to making aesthetic choices. A student must realize that there is no single way to design a soundtrack. There are only *approaches* that work in different situations, at different times for different

reasons. And this is what keeps the work interesting and challenging, Varney believes. Otherwise, "It would not be a very creative process."

Thus, the intention of the following discussion is not to define the "correct" method of designing a soundtrack, but rather to make suggestions that might help a student develop his or her own ideas on the subject. Probably the best place to begin is to learn how to *listen*.

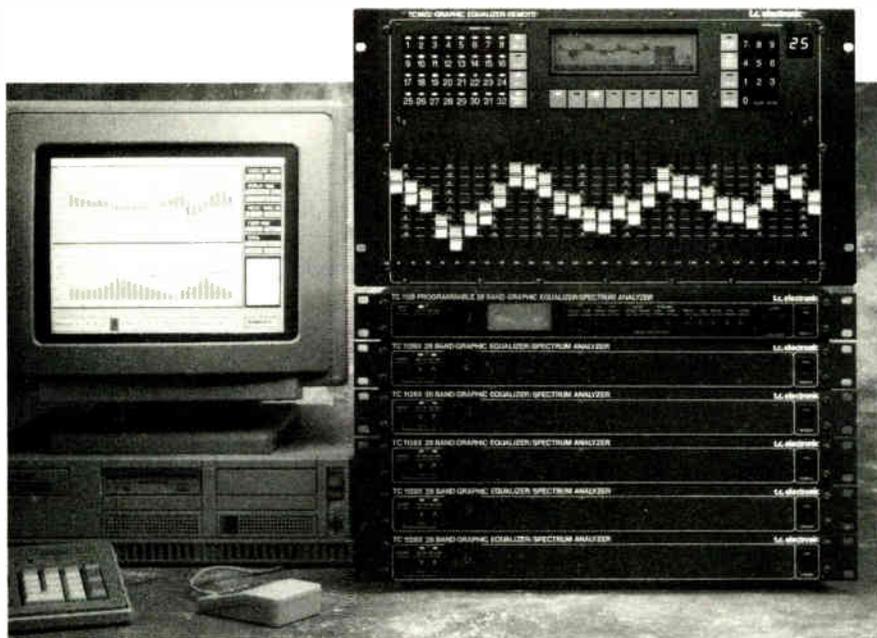
Sight, Sound and Perception

Before focusing your attention specifically on how movie soundtracks are

—CONTINUED ON PAGE 136

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Listen and Learn

There are literally hundreds of films worth listening to and studying. Here are just a few:

- 2001: A Space Odyssey*, Stanley Kubrick
- A Clockwork Orange*, Stanley Kubrick
- Alexander Nevsky*, Sergei Eisenstein
- All That Jazz*, Bob Fosse
- American Graffiti*, George Lucas
- Apocalypse Now*, Francis Ford Coppola
- The Birds*, Alfred Hitchcock
- The Black Stallion*, Carroll Ballard
- Blow Out*, Brian DePalma
- Bonnie and Clyde*, Arthur Penn
- Citizen Kane*, Orson Welles
- Close Encounters of the Third Kind*, Steven Spielberg
- The Conversation*, Francis Ford Coppola
- Dodes'ka-den*, Akira Kurosawa
- Doctor Zhivago*, David Lean
- Frankenstein*, James Whale
- The Godfather*, Francis Ford Coppola
- The Graduate*, Mike Nichols
- Great Expectations*, David Lean
- King Kong*, Merian C. Cooper & Ernest B. Schoedsack
- La Grande Illusion*, Jean Renoir
- The Last Emperor*, Bernardo Bertolucci
- Lawrence of Arabia*, David Lean
- Little Big Man*, Arthur Penn
- M*, Fritz Lang
- The Magnificent Ambersons*, Orson Welles
- Monsieur Hulot's Holiday*, Jacques Tati
- Nashville*, Robert Altman
- Psycho*, Alfred Hitchcock
- Raging Bull*, Martin Scorsese
- Raiders of the Lost Ark*, Steven Spielberg
- The Servant*, Joseph Losey
- Star Wars*, George Lucas
- Taxi Driver*, Martin Scorsese
- Wild Strawberries*, Ingmar Bergman
- Wings of Desire*, Wim Wenders

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Ten Popular Studio Mics

So I was sitting there under the apple tree, my body for all practical purposes still here on Earth, while my spirit explored the edge of the Universe. Suddenly, the phone rang, and our beloved editor-in-chief handed me a cosmic puzzle

by **Stephen Paul**

photo by **Bill Schwob**

I knew would tax me to the utmost: "Hey, let's do an article about the most popular studio mics priced in the \$500-and-under range."

"Okay, let's," I replied eloquently. And so here we are.

To accomplish our task, we looked at mics

that have gained acceptance among engineers, artists and producers, but don't put a black hole the size of an Astronomical Unit in our pockets. We carefully measured the mics and then tested them aurally on several of the most revealing and commonly used sounds.

For your own edification, the measurements were done on a calibrated Techron TEF™ Time Delay Spectrometry analyzer in our lab, and the listening was done through Mogami cable, Type 2534, conductors doubled up, but not in quad configuration (we have found that wiring in quad raises the capacitance of the cable quite a

Microphones below from left to right: Shure SM57 & SM81, Sennheiser MD-421, Beyer M500, Electro-Voice RE20, Sennheiser MD-441 and AKG C-451, D-112, AKG C-460 and AKG D-12



Priced Around \$500

bit and detracts from the sound clarity audibly), then into a Jensen twin-servo microphone pre-amplifier. This output was then fed on Mogami 2534 to a Panasonic SV-3700 delta-sigma, 1-bit converter DAT and the results stored here. The monitoring took place on a set of Klein and Hummel 096 speakers (made in Germany and available through Gotham Audio). These include internal, active, phase-corrected crossovers, with internal tri-amplification. The crossovers have no interstage capacitors, and the power amplifiers are direct-coupled and DC-nulled. The only capacitors in the chain are in the mics

themselves (in the case of condenser mics), and in the DAT machine. Spot checks were also done on Stax 1.5-micron Lambda Pro electrostatic headphones.

Please remember that this is not a review or critique, but rather a guide and overview to these microphones. They were tested on male voice, female voice, a jumbo Guild 12-string guitar with



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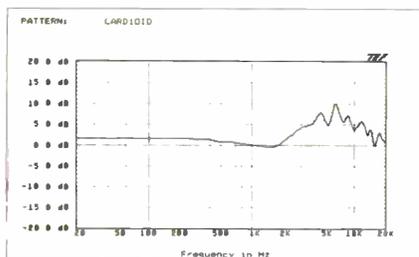
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medium strings, a Schimmel piano, kick drum, and tom-tom. All mics were set in the "flat" (non-roll off) position.

Prices listed are manufacturers' suggested retail, although actual pricing may vary. Test results are presented in no particular order.

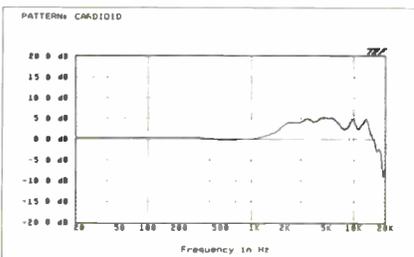


SENNHEISER MD-441
(Cardioid dynamic, \$629)

We found the 441 to have a clean, crisp and full sound on a male voice. Authorita-



tive and convincing. On the female voice there was a slight sense of indelicacy, though again convincing and crisp. On the 12-string there was a fair amount of string noise, but overall decent tone and a good rendition of the instrument. Piano sounded slightly distant and midrangey, and there was some harmonic loss. On kick this mic gave a satisfying thickness with plenty of midrange sense and a fair amount of pedal noise. On tom-tom the mic was again thick-sounding, good overall balance, with a slightly ringy quality. Overall, a stunning performer for a dynamic mic. Look at 20 kHz on the chart! Proximity in spades—place with care if you want to use the boost. Cardioid rejection good but not great, so keep this in mind.

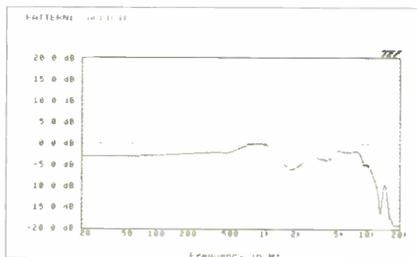


SENNHEISER MD-421
(Cardioid dynamic, \$429)

On male voice, the 421 was a bit thin, but crisp. On female voice, there was a throaty quality;



overall, not bad at all. The 12-string sounded somewhat boomy, and we lost harmonic structure, though there was some string noise. There was noticeable intermodulation. The piano lacked a sense of bottom end, and the intermodulation characteristic was excited by the rich harmonics present in the instrument. On kick this microphone suddenly came alive! Fabulous punch in midrange, and well-balanced on bottom and top. A sterling performer in this application. (I can't tell you how many records I've cut using this mic on kick. Now I know why.) On tom-tom the skin tone came through convincingly. The MD-421 is a great drum mic, as a lot of us obviously know. Some proximity evident, although it's not really sensitive to placement, and outstanding cardioid rejection helps to get isolation from those pesky cymbals!

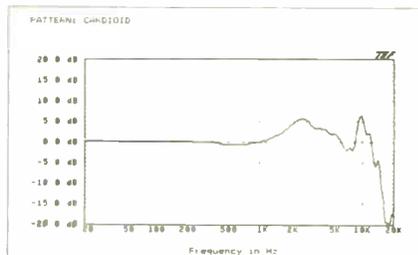


AKG D-12E
(Cardioid dynamic, \$425)

Male voice... well, we can give an indication of this mic's intended application by simply quoting our session notes: "Woolly and muffled." I think



that pretty much says it all. On female, this could be an asset in some cases, as the mic presents a very smooth image. The impression of dynamics is also somewhat limited. (It should be noted that this mic has been discontinued by AKG but is still available in the U.S.) On the 12-string there was lots of wood but no string harmonics. Piano was a surprise, as there was a decent balance and a nice sense of mids. On kick, the mic was midrangey but delivered a hell of a punch. The tom was noticeably lacking in top end. In the booklet supplied with the mic, it is recommended for bass—both electric and standup—and brass and kick. I'm inclined to agree.



AKG D-112E
(Cardioid dynamic, \$225)

This is AKG's replacement for the D-12. Designed



Methodology

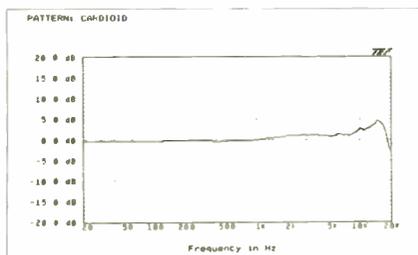
In preparing this article, the *Mix* editorial staff queried 40 24-track recording businesses, ranging from world-class facilities to smaller studios throughout the U.S. In this representative—but basically unscientific—sampling, we asked what microphones priced around (or under) \$500 were commonly used at the studio. After compiling our list, we contacted manufacturers, who supplied production samples to Stephen Paul Audio for testing. Since we limited our survey to currently available models, microphones such as the RCA 77DX/44DX, Shure SM56, Neumann KM88/KM84, Sony ECM-50 and even the lowly (but unfortunately now discontinued) Radio Shack PZM were often cited by the studios, but are not included here.

Coming up with a "Top Ten" list can be a brutal thing, since any model that comes just after the Number Ten spot is sure to be left out. So it's probably worth mentioning a couple semifinalists that just missed the cut; perhaps it would be better to refer to these as "Honorable Mentions." These include Crown's PZM-30R Pressure Zone Microphone™ (\$349); Sony's ECM-23 cardioid condenser (\$195); and the Beyer M88 hypercardioid dynamic (\$399.95).

—George Petersen

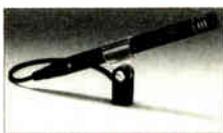
basically as a kick drum mic, it performed quite a bit better than the D-12, but was certainly at its best on drums. On male voice it was dry and a bit thin, with little sense of immediacy or intimacy. This is probably due to the pop protection, which allows the D-112 to withstand the tremendous pressure wave that occurs when the pedal is pumped. Female also seemed thin. Twelve-string guitar and piano sounded distant and boxy, and it was clear that this mic has the characteristics of a bandpass filter of only a few octaves. This could come in handy for a number of effects with singers.

Kick was satisfyingly punchy and easily color-controlled by placement. Use this one tight and get that huge thumping whump that would turn another mic to compressed jello. Tom was caught with a deep tone and a visceral percussiveness. Cardioid rejection is excellent, helping to isolate your kick from all those other nasty waveforms. The bandpassing helps in this regard as well. A killer kick machine.



AKG C-451EB (Interchangeable capsule condenser, tested with CK-1 capsule, \$495)

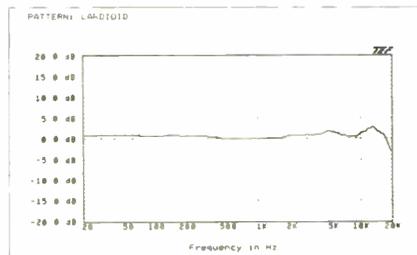
A condenser mic! Now we're talking! There's no question about the audible differences a condenser mic can make, and this listening test certainly bears out the engineering facts. What's interesting, though, is that there are tasks that are much harder with condensers.



On the male voice, the mic was dry-sounding and slightly sibilant. On female, sibilance was more evident, and the image was a bit thin. The 12-string, however, was convincing, very detailed, with good balance and range and gave an excellent rendering of the tone. Piano was a bit of a surprise, as at our test distance (1.5 feet above the rim, edge of microphone case parallel to the rim, at rim distance and pointed at the center of the soundboard), the

mic sounded distant, somewhat thin and lacking in richness. (It should be pointed out for those of you who may not be experienced engineers that placement is so critical that only by personal experiment may we find the correct place for a particular mic. Therefore, these are the barest of references and not really indicative of the microphones' ability at optimum placement point. They are included as a subject of interest, as they give some idea of the "reach" of various mics from a common point.)

Kick was tough, since we didn't have a windscreen and had to resort to greater distances and off-axis techniques to get usable results. Suffice it to say that this is not a great application for this mic. Condenser mics don't like wind. Tom-tom was rendered beautifully, with clear, clean transients and a tangible edge that's hard to beat. Proximity response is somewhat controlled, so placement for this isn't real critical. Rejection is very good for a mic of this type. Good one, mon.

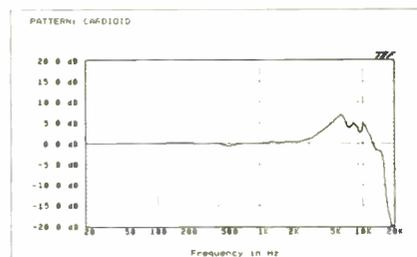


AKG C-460B/CK-61 ULS (Interchangeable head condenser, tested with CK-61 capsule, \$550)

Righteous, man, righteous. Never heard one of these before.



Male voice: competent, clean, neutral. For some reason I find that neutral is a compliment in this case. Female was convincing, again neutral, but the image was a little thin. The 12-string came through like a friggin' freight train. Exciting presence, great balance. Piano was clear and warm, great harmonic balance, slightly distant. Kick was fantastic. The current drivers in this amp are pretty gnarly. The mic delivered. Tom-tom was clear, impressive sense of percussion. Definitely placement-sensitive, proximity-wise, and as we might expect from this, really excellent rejection. How much are these, mister?

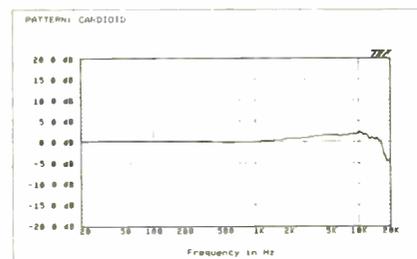


SHURE SM57 (Cardioid dynamic, \$141.25)

Well, we were all raised on this little devil,



weren't we? The surprising thing is, this workhorse continues to sound good after all these years. Essentially the same microphone as it was in yesteryears, the SM57 is probably still one of the best bargains in audio today. On male voice, it was crisp, balanced and convincing. On female voice a little thin but clear. On 12-string it wasn't bad at all, little short of astonishing for a mic that still goes for 80 bucks on the street. Clear, though not with any great sense of depth. On the piano it was usable, not real big, but decent. A bit distant as well. On kick, the mic needed to be close in to get a fat sound, but it had a lot of punch. On tom it was good, though a bit ringy or resonant-sounding. There is some proximity effect, so place carefully; rejection is excellent. One of the wonders of the modern world.



SHURE SM81 (Cardioid condenser, \$410)

An interesting, well-designed performer, but I must admit a small amount of disappointment, as I expected better performance from the capsule.

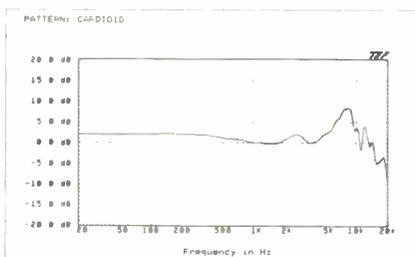


On male voice it was dry and balanced, though there was little sense of intimacy. On female it was thin, and the sense of presence was subdued. On 12-string, it was slightly boxy but very percussive-sounding, with a nice, warm bottom. Really a good budget condenser overall. On piano it was

crisp, but midrangey and not all that clear. It sounded resonant on some of the harmonics, but the mic had excellent "reach" and the piano sounded closer than it did on many of the others. Kick was difficult—even with the pad in, it overloaded easily. This may have accounted for the lack of a gut-wrenching snap. A windscreen might help here. On the tom it was clear but a little thin; some placement could help, but watch out for the overload point. Good punch, though. Tons of proximity, so as the wicked witch said, place d-e-l-i-c-a-t-e-l-y. Excellent rejection completes the picture. Try this one on snare.

ELECTRO-VOICE RE20
(Dynamic cardioid, \$630)

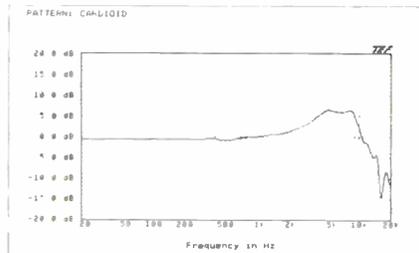
Isn't this the one that (TV psychiatrist) Dr. David Viscott uses? Appropriate, really; this sucker is HUGE. If the patient gets out of control, it can be used as a weapon. I wasn't sure what to do with this thing. It's Stevie Wonder's



vocal mic, of course. It's got that dry, quiet sound. On male voice this was especially apparent. It's worth noting that the "Variable D" design really works here. Proximity is incredibly controlled, while a truly awesome rejection spec is maintained. It sounded distant on female voice, and on the 12-string it was again dry, gave a clanky rendering of the strings, offered little intimacy. This might be a fabulous six-string mic, especially for an older Martin, where you want to control the boominess without a roll-off and you also want to brighten up the "wood" of the instrument. (Although not part of these tests, I can vouch for this mic application from personal experience. Back in 1970 when I was an artist on Atlantic and there weren't any phasers, I used it on a Leslie cabinet with my 12-string with great stereo results. It was

Vanilla Fudge's Leslie, in fact.)

Piano wasn't bad, with a good balance and an interesting sound, though somewhat distant. Kick was dynamite. Dry, tight, punchy, well-balanced bottom and top. Tom was not very warm, but decent. Placement's not too critical, and the rejection is out of sight. Literally. This mic has a unique sound and works on many things.



BEYER M500S TG
(Hypercardioid ribbon, \$419.95)

The respondents in the *MIX* survey reported that this mic was used on kick, vocals and voice-over work. It should be noted that this is a dual-ribbon design, with low-mass ribbons, and decent transient response in many



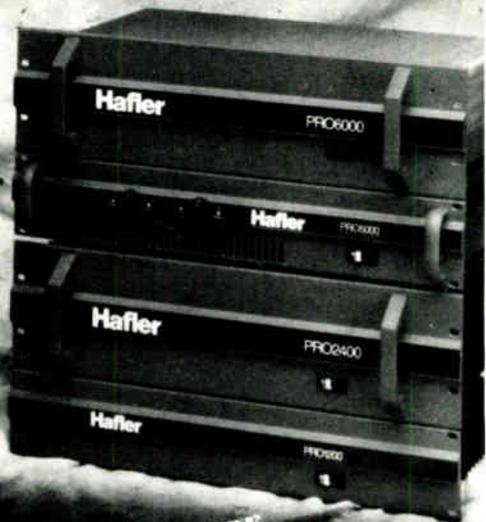
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applications. We found that on male voice it was clear, but a bit thin and mechanical-sounding. On female it was thin as well, but improved dramatically when used close-up. On the 12-string it wasn't balanced-sounding; the thinness cut too heavily and shorted us on the weight of the guitar. On the piano the mic showed its bite, and was a little garish. This microphone seems to have been optimized for close-up vocal work, and certainly remains clear in this difficult application.

On kick the M500 had a viscerality that was nice, and placement to achieve a warm bottom was essential. (In my opinion, a warm bottom is *always* preferable to a cold bottom! Move over, dear...) On tom it gave a good rendering, but again this babe wants to be close, close, close! Proximity is highly controlled, and this mic is the standout in the crowd, as it's a hypercardioid design. (A small lobe of pickup is present at 180 degrees with cancellations in the polar pattern on either side of this lobe.)



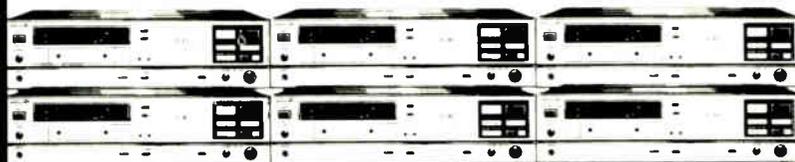
And there it is, ladies and gents. I would like to reiterate that the descriptions given are a guide to the subjective qualities of the mics in a given setup and with a given range of sound sources. Using this guide inventively, coupled with the charts of the actual response of these microphones, may help you to select one of these for a job not discussed in the article. For example, a mic that sounds thin on the 12-string might be exactly what you want in a situation where you have an overly mellow instrument whose low harmonics would be overwhelming on a full-bodied microphone. A mic that is less impressive in high-end response may be just what's needed for a screechy singer, et cetera, et cetera.

Keep in mind that there are numerous solutions to every miking problem, and many of these microphones represent tremendous bargains in today's professional audio market. If you find something strange that works, let us know. We love strange things.

I'd like to thank Jennifer Meller, Tony Merrill and Tracy Korby for their technical assistance with this article. ■

Stephen Paul, the president of Stephen Paul Audio, currently performs with his band Roof Access at Genghis Cohen's Cantina in Los Angeles.

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by Paul Potyen

AUDIO & BEYOND

SOME THINGS YOU ALWAYS WANTED TO KNOW ABOUT CD-ROM BUT WERE TOO BUSY TO ASK

W

hile CD-ROM technology has been around for about as long as audio compact discs, it has not captured the imagination of the world in the same way as CD audio. While there have historically been a number of obstacles preventing the widespread use of CD-ROM, there are indications that many of those obstacles are disappearing, and we are now at the beginning of a surge in the demand for CD-ROM hardware and software.

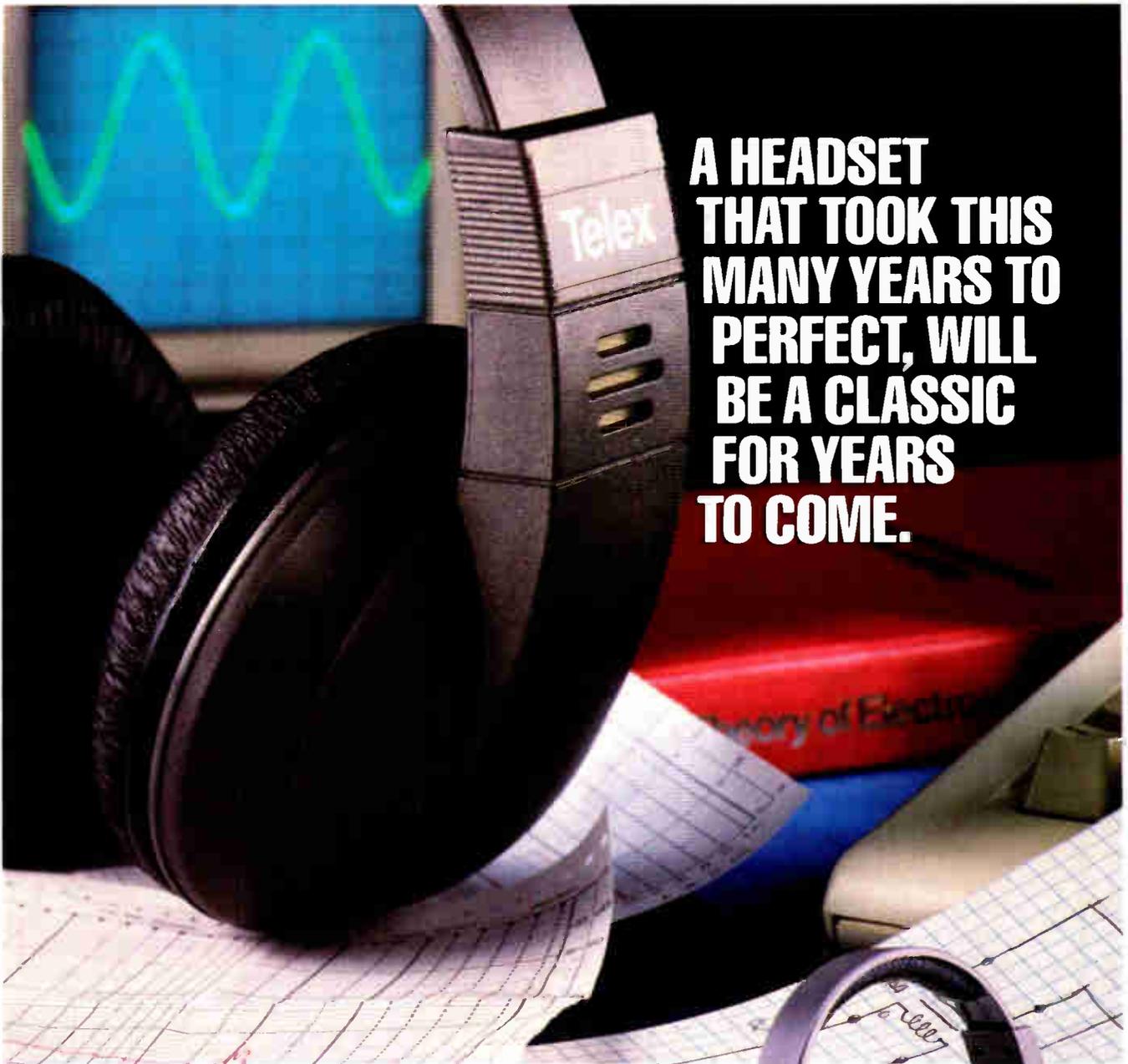
In this column I'd like to present a little background on CD-ROM, make a case for why you might be interested in using this emerging technology and look at several CD-ROM drives now available.

One of the reasons CD-ROM has been slow to catch on is that, unlike CD

audio, it's not an easy concept to explain. A compact disc can be described pretty succinctly as being like a record with superior fidelity and durability. While there are many similarities between CD-ROM and CD audio (they look the same; they both store digital information), there is unfortunately no single precedent to describe what CD-ROM can do. To musicians, engineers and producers who use computers as production tools, CD-ROM is most readily compared to a magnetic hard drive (the hardware) with 650 megabytes of data on it (the software), but you can't edit any of the data unless you copy it to another hard drive. The data includes anything that can be stored digitally, including text, graphics, scanned images, animation, digital



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no additional side-effects under Multi-Finder.

For each of the drives I measured the time to copy, open, get info and quit applications on the Apple Developer CD-ROM disc called *Discy Business*. To determine access time (time required to access a particular address on the disc) and transfer rates (speed at which information is loaded from CD-ROM to the computer's RAM), I used Disk Timer III from Nuvo Labs.

Here are my thumbnail reports on each of the units tested.

CDP-1B

Optical Media International

Los Gatos, CA; (408) 376-3511

Drive mechanism: Sony CDU 6211

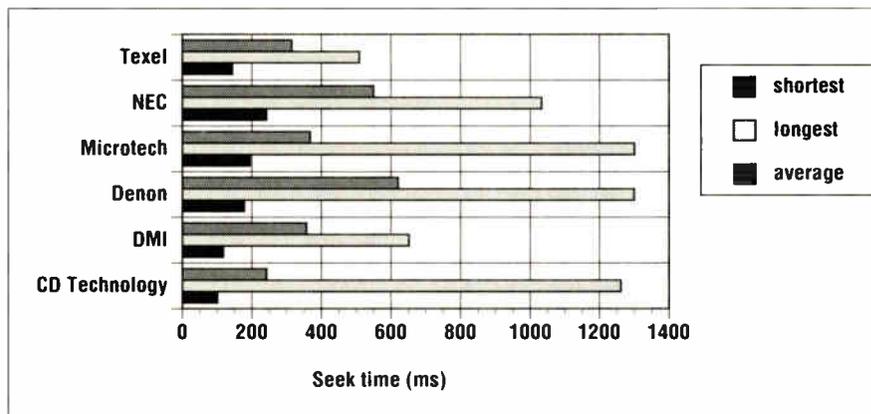
Warranty: 1 year

List price: \$795

The OMI CD-ROM drive uses a new Sony mechanism—the same one used in the new Apple CD-ROM drives (the original Apple CD SC used an older, slower Sony mechanism). The unit provides stereo audio out via RCA jacks, a mini stereo headphone out with a continuous volume pot, and an

easy-to-use external SCSI ID selector. Be advised that when you purchase this drive, all you get is a power cable, a CD-ROM caddy and a manual—SCSI cable, SCSI terminator and driver software are each available for an additional cost.

ditional cost) also contains OMI's Play CD HyperCard stack. The version I used didn't work very well: fast-forward and rewind buttons didn't respond. (I was told that it doesn't run correctly with HyperCard 2.0 and certain CPUs.) The average access time



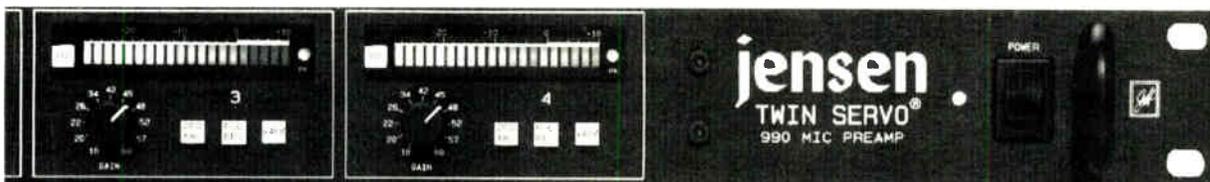
One of OMI's main focuses is the production of CD-ROM discs with sound effects for SCSI-based samplers. Reflecting that orientation to pro audio, the manual provides instructions for use with E-mu's Emax II, EII, Akai's S-1000 and Roland's S-550. The Mac driver software disc (provided at ad-

and transfer rate were good, and OMI's sensitivity to the needs of pro audio could come in handy in terms of customer support.

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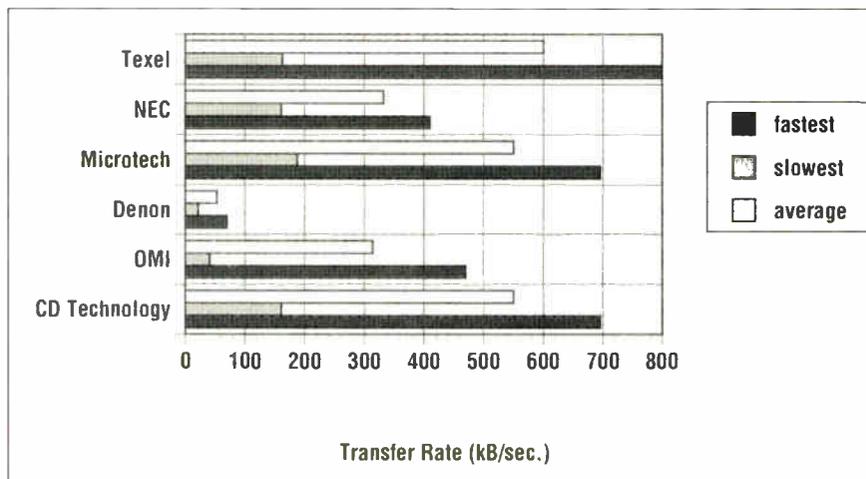
Drive mechanism: Toshiba T3201
 Warranty: 1 year
 List price: \$895

The Macintosh version of the CD Porta-Drive ships with Mac driver software (including OMI's aforementioned Play CD software), a CD caddy, documentation and an external power supply. An optional battery pack and converter make this a truly compact, portable CD-ROM unit. Also optional are the SCSI cable and terminator. But one of the more pleasant surprises was the inclusion of *Introduction to Nautilus*, a multimedia magazine on CD-ROM, published by Discovery Systems in Dublin, Ohio. It has already provided me with much valuable information on the potential of CD-ROM, as well as hours of enjoyment.

The CD Porta-Drive was the smallest of the units I looked at and the fastest in terms of access time. It is equipped with RCA audio left and right outputs, a mini headphone jack with a three-position volume switch, and an external switch for setting SCSI ID. I do, however, have one teensy complaint: The dual SCSI ports on the back of the

unit are so close together that it was only after considerable huffing and puffing that I was able jam my SCSI cables onto both.

case that Microtech uses for its Syquest removable drives. Microtech provides its own Macintosh driver software, caddy, power cord, manual, Mac Ani-



CD600
Microtech International
 East Haven, CT; (800) 626-4276
 Drive mechanism: Toshiba T3201
 Warranty: 2 years
 List price: \$899

The CD600 uses the same Toshiba mechanism as the CD Porta-Drive, which in this case is housed in the same

information Showcase CD-ROM disc, 25-50 pin and 50-50 pin SCSI cables, and a terminator—all at no extra cost. In addition, Microtech's solution for audio CD playback is MicroTraxx, a very sophisticated DA that comes on the same disk as the driver software. All functions work flawlessly, including user-definable section looping.

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Another nice feature not found on the previous units is the inclusion of an on/off light. While there is an external SCSI selector, the device does not provide separate audio outs; CD audio can be played only through the stereo mini headphone output. Performance was slightly less than that of the CD Porta-Drive.

DRD-253

Denon America Inc.

Parsippany, NJ

(201) 575-7810

Drive mechanism: Denon

Warranty: 1 year

List price: \$779

The DRD-253 was the largest, heaviest and slowest of the units I tested. It ships with a SCSI cable for the IBM PC (which the manual says should not be used with the Mac), the Macintosh driver software, a caddy and manual (apparently translated from Japanese). The drive is normally internally terminated, but can be adapted via DIP switches to function unterminated in the middle of a SCSI chain. SCSI address is also determined via DIP switch settings. It's the only drive I looked at with a built-in speaker. It also has a "sleep mode" that prolongs the life of the spindle motor assembly.

Audio Commander 1.2 is a HyperCard stack that Denon provides with the driver software disk to allow playback of CD audio. While not as elegant as MicroTraxx DA, it did function better on my system than OMI's Play CD stack. Like the CD600, the Denon unit has both an on/off light and an activity light. And like the CD600, separate audio outs are not available.

CDR-72

NEC Technologies Inc.

(708) 860-0335

Drive mechanism: NEC

Warranty: 1 year

List price: \$799

The CDR-72 is one of two flavors of CD-ROM drives available from NEC; the other is the less expensive, slower, portable CDR-35. [At press time, NEC announced it was replacing its CDR-72 and CDR-35 with the CDR-73 and CDR-36 models. Both offer much faster access times than their respective predecessors.] The CDR-72 uses NEC's own drive mechanism, which is somewhat slower than the Toshiba and Sony drives. It comes with a SCSI cable, SCSI terminator, disc caddy, power cable, manual and driver software. Also

included is hardware that gives the user the option of mounting the drive vertically.

The unit has left and right RCA audio outs, switchable AC power, and SCSI termination via DIP switches. Located on the front panel are on/off and activity lights, and stereo mini headphone output with continuous volume control. Music Box is a Desk Accessory included with the driver software for audio CD playback.

DM 5021

Texel America Inc.

Sunnyvale, CA

(800) 348-3935

Drive mechanism: Texel

Warranty: 1 year

List price: \$799

The Texel DM 5021 CD-ROM drive for the Mac comes with a SCSI cable, driver software and the Music Box DA mentioned above. Audio playback is through the headphone jacks on the front panel. The manual shows DIP switch settings that are accessible by removing a plate on the bottom of the drive. I removed the plate and then the cover, and still couldn't find any DIP switches. By trial and error I discovered that the SCSI address of the CD-ROM

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TM: Track Chart, Vision, Studio Vision, Opcode Systems, Inc.
Macintosh, Apple Computer, Inc.

drive was #2, and I had to change the address of another device in my system to eliminate the ID conflict.

Once mounted, the Texel drive performed with the best of them: The transfer rate was the fastest of those I measured. Texel makes several other models with various internal and external configurations, degrees of ruggedness and efficiencies. The DM 5021 was rated the fastest of the Texel drives.

Conclusions

For me, access speed and transfer rate were important, and from that standpoint the OMI, CD Technology and Texel drives performed the best. The lack of line-level rear panel audio outs on the Texel and Microtech players was a slight disadvantage. If compactness and portability are important, you'll be better off with the CD Technology drive. Otherwise, the OMI drive is a good solution, bearing in mind that the accessories are not included in the package.

These are only a sample of the CD-ROM drive options now available. For those who prefer rack-mount versions, Dynatech can accommodate you. Other manufacturers include Hitachi, Chinon and Pioneer, which makes a player that holds up to six discs. Many of these drives (as well as CD-ROM titles) are available from mail order houses such as The Bureau of Electronic Publishing ([800] 828-4766) and CD-ROM Inc. ([303] 231-9373). ■

Paul Polyan is associate editor of Mix, and a freelance composer/musician.

Correction: On page 61 of April's "Byte Beat," paragraph two of "In Search of a Unified Time Base" should have read "...the PCBDAW will bring you in at 44,100 samples x 60 seconds" (not 59 seconds).

The point is, if the master tape is running too fast, the time code numbers coming from that tape will get ahead of the actual time. The DAW calculates the location to which it should chase based solely on the time code address times the sampling rate—not actual time. At one minute it will come in ahead of where it should have ideally. Thereafter it will fail to play at the accelerated rate and gradually fall behind the audio tape.

Chip Shots

Opcode Systems discontinued its line of individual librarian programs for the Macintosh computer in favor of Galaxy, the company's universal librarian, and Galaxy Plus Editors, a universal librarian with installable editors. Several new Galaxy modules have also been announced. New librarian compatibility includes Alesis MIDVerb III, E-mu Proteus 2, Ensoniq SQ-1/SQ-R, Korg Wavestation, Rane MPE 28/47, Roland R8M, D-70, GP-16, and the Yamaha TG77. The new modules are available free of charge from Opcode dealers and for a \$15 shipping and handling fee directly from Opcode. Opcode Systems Inc., Menlo Park, CA; (415) 369-8131.

Xymox Systems released an upgrade to its Tape Library module, which is part of Xymox's Myriad Facility Manager computer system. The new release features the ability to search for masters by job number, agency, client and keywords. New system enhancements for duplication facilities are currently in development. Xymox Systems Inc., Los Angeles, CA; (818) 366-9022.

Modgraph Inc. announced 486 and 386 caching models to its line of portable IBM PC compatibles. They offer 15-35kHz multisynching, super-VGA CRT displays, and extensive expansion and custom configuration capabilities. Modgraph Inc., Burlington, MA; (800) 327-9962.

Frontera Electronics introduced the *i•cove* series of rack-mount storage systems for SCSI-equipped keyboard samplers from Roland, Ensoniq, E-mu, Kurzweil, Akai, Casio, Peavey and Dynacord, as well as IBM, Macintosh, Amiga and Atari ST computers. Systems range in capacity from 40 MB to 1,200 MB, and include fixed hard disk drives, removable-media drives, CD-ROM players and DAT backup drives. Frontera Electronics, San Marcos, CA; (619) 727-3410.

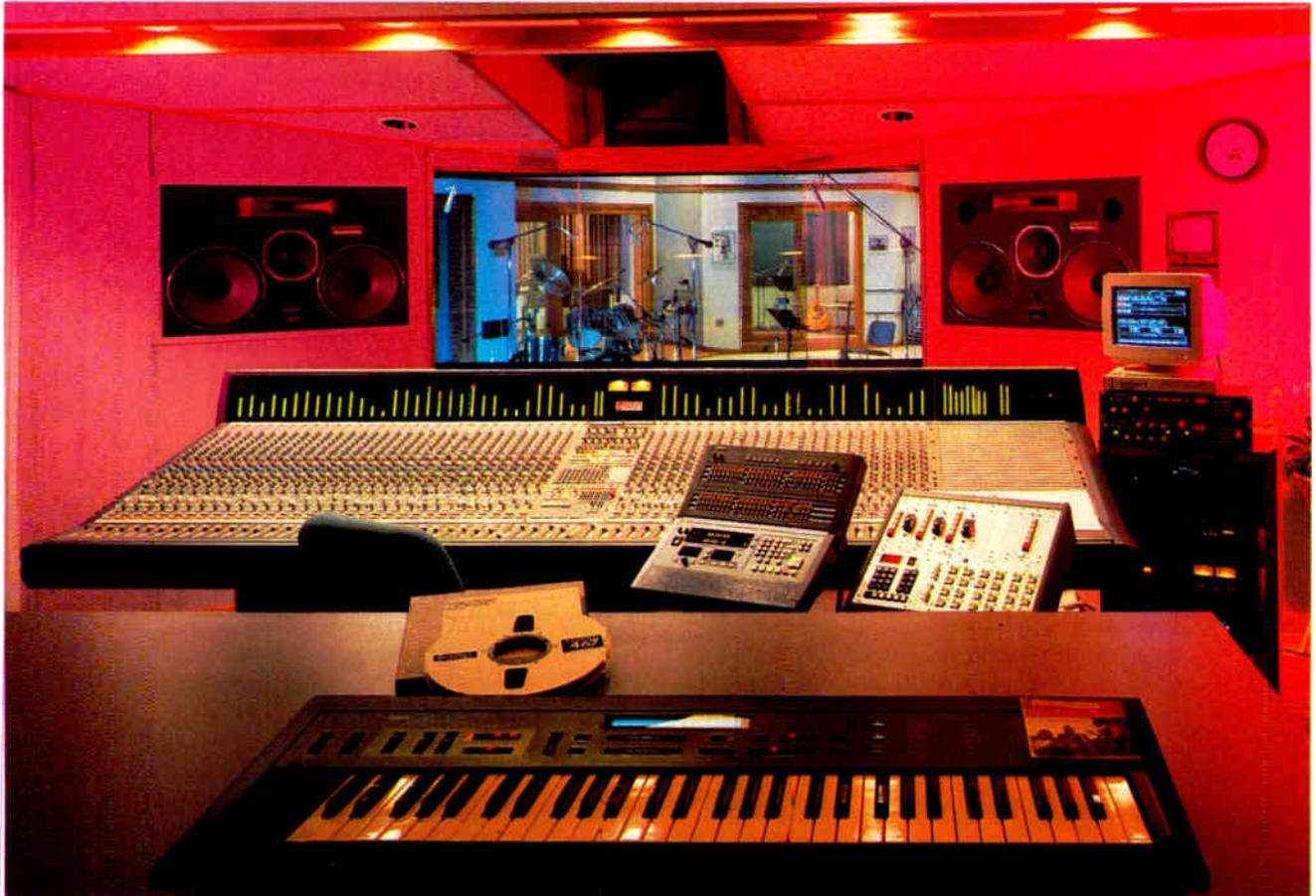
Turtle Beach is now shipping Version 2.0 of its Oview/Proteus Synth Programmer for IBM compatibles. New features include support for Proteus 2, 2XR, 1+, and Proteus 1 and 2 with In Vision's ROM set. The retail price is \$149, with upgrades to all registered users for \$25. Turtle Beach Systems, York, PA; (717) 843-6916.

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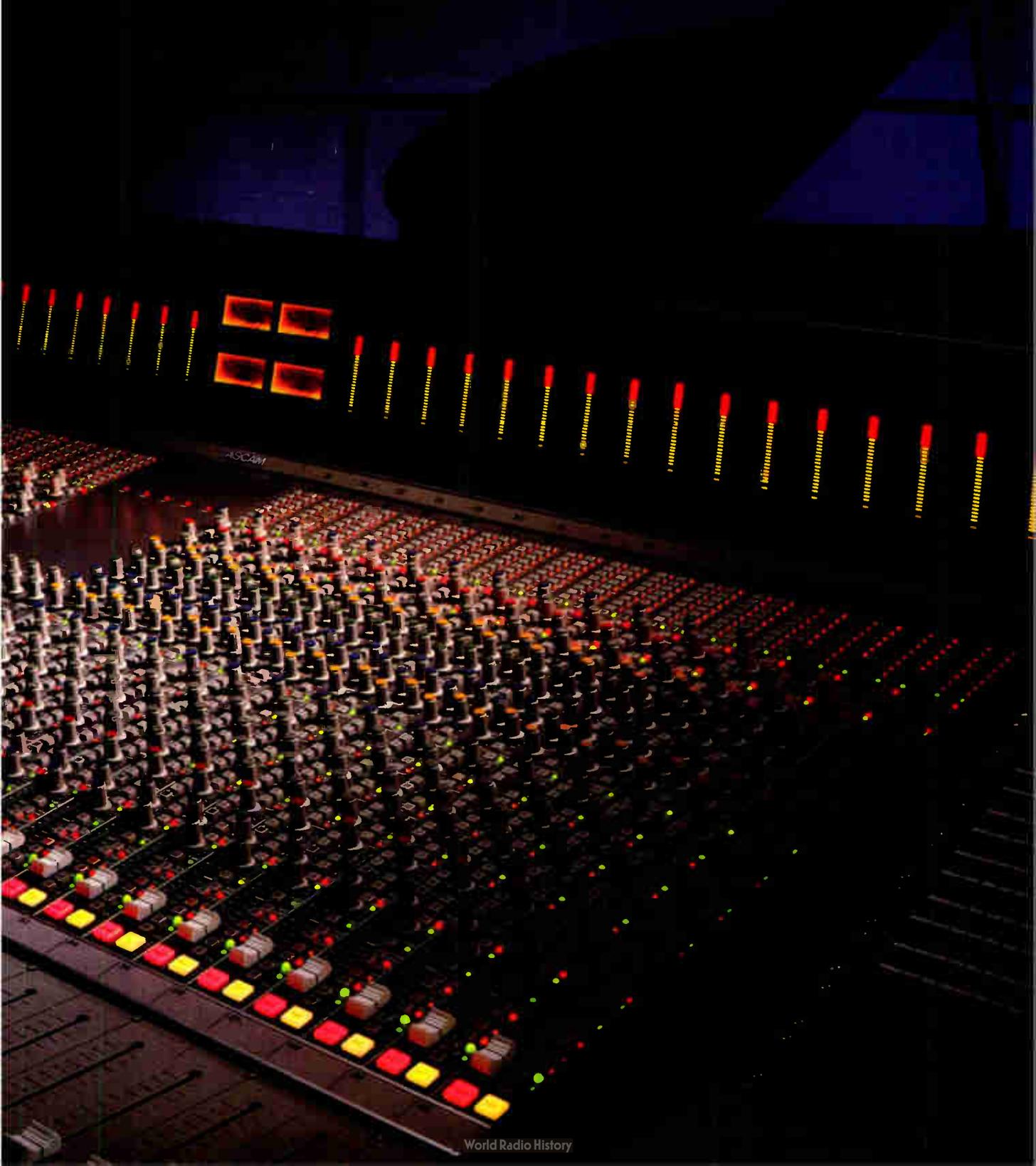
When you decide to move up to digital, to accompany your console, one option to consider is the DASH format DA800 24-track digital recorder with award-winning ZD circuitry. Currently available for \$99,000*.

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STUDIO VIEW

possible and viable in the first place. With 8-, 12- and 16-track decks available at a fraction of the cost from only a few years earlier, relatively sophisticated recording facilities were literally established in living rooms and garages. MIDI also played a big part in establishing the project studio, providing an MI equivalent to the automation systems available to larger budgets. And effects systems came down in price and grew in capabilities, from multiroom reverbs with sophisticated parameter functions, to more esoteric audio processing items like exciters.

More recently, analog enhancement systems such as Dolby SR have found their way into consumer and mass markets, giving tape an extended lifespan. At the same time, hard disk digital recording systems are beginning to offer virtual recording at affordable prices.

Equipment

Project studios will have a large selection of equipment to choose from for some time to come. Aside from a continuing trend of reasonably priced new gear, there is a robust used equipment market for everything from microphones to multitracks, making upgrades viable and affordable. Interfacing between studios should pick up as 1/4-inch, 8-track and 1-inch, 16-track studios come in-line with the more common 2-inch, 24-track format. And the diversity of low- and mid-level budget projects for cable TV and industrials will keep common tape formats strong well into the next century.

Looking long-range, the digital audio workstation will become relatively common within a few years. A limited number of project studios are already equipped with heavy artillery like the New England Digital PostPro and SSL ScreenSound units. But it's the inexpensive, software-based systems like Digidesign's Sound Tools that, when combined with the growing universality of Macintosh computers in studios, are the next step up from MIDI computer programs.

Then there's the new generation of multitrack workstations nearly ready for production from MI companies, notably Yamaha, Korg and Roland, that appear tailor-made for the project room. These systems use either hard disk or chrome-formulation cassette

tape formats and offer features found on more complex units from dedicated and pro audio manufacturers. Their initial offering prices are hefty, ranging around \$40,000, but the past has shown that once any real buying gets underway, prices come down pretty fast. The current workstation compatibility problem is still going to be around, but MI manufacturers agreed on standards for their digital format, MIDI, relatively swiftly.

From a marketing point of view, MI manufacturers are closer to the roots of the project studio operators, most of whom began as musicians. The matter of brand recognition will play an increasingly large role as a result. As MI companies provide more capable systems, the amount of competition in the workstation field will increase, putting pressure on all manufacturers to include as many features as possible at the lowest price possible. This trend will be accompanied by an increase in the number of potential users as project studios find the systems more affordable.

Coexistence

The previously mentioned mutual antagonism between project rooms and commercial for-hire facilities lingers to a degree, but it's being replaced with a notion of coexistence, which will only expand in the future. While the legal implications are slowly being addressed by various localities via zoning ordinance changes (within the larger context of the growing home-office phenomenon), both types of facilities have found they can work together. Project rooms can take advantage of the top-of-the-line equipment and large acoustical spaces found in commercial facilities, and commercial facilities can widen their client bases by offering exactly those features to client-loyal project studios. Ultimately, alliances between different project and commercial rooms will form, allowing each to offer that much more to clients.

Training

Cable television and the corresponding increase in programming have provided one of the main fuels for the project room. However, they also bring up an issue that has been a thorn in the side of many commercial facilities. There have been complaints about the technical quality of work coming out of some project rooms, ranging from

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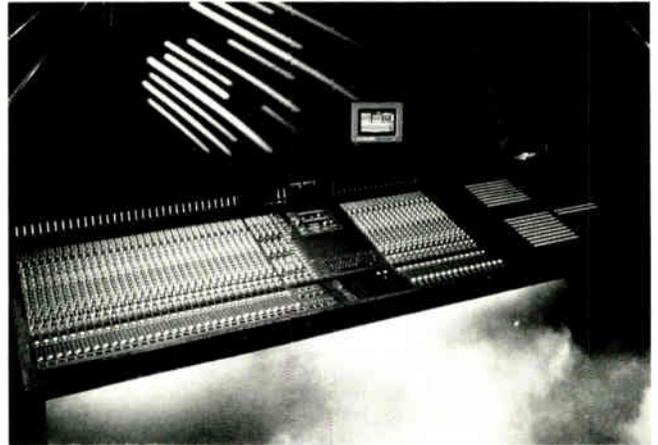
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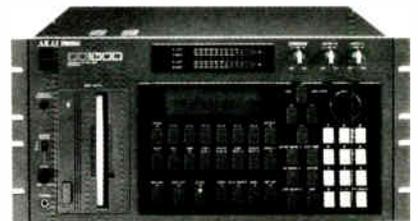
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STUDIO VIEW

poorly recorded calibration tones (if any were recorded at all) to distortion and poor imaging.

The reasons for the sometimes lower quality are twofold. First, for a lot of clients out there, particularly cable programs, good enough has been... well, good enough. What would not be acceptable for a General Motors spot might be plenty acceptable to *Wayne's World*. Granted, television is beginning to pay more attention to audio, but until better consumer sets are ubiquitous, expect to see (or, I should say, hear) this sort of thing for a while. The scaled-back budgets of much of cable television means that commercial facilities can't afford to take on some of the jobs. On the other hand, this work is perfect for project studios, with their lower overhead. Project studio operators need to focus more on the technical aspects of the project. Satisfying the non-technical client that something sounds good isn't enough; it has to be remembered that mastering, layback and broadcast engineers in facilities down the food chain have needs as well.

Second, there is the basic problem of training. Traditionally, engineers learned by osmosis during 20-hour days in the studio. But project studio owner/engineers, in many instances, don't have that background. The first experiences for many were gleaned from 4-track PortaStudio manuals (not, incidentally, the worst thing that could happen: the Tascam manuals made a successful effort to include some practical theory as well as operating instructions), leaving them without a grasp of the fundamentals. This is changing, especially as project studios become successful and interact with the large pool of freelance engineers. Also, independent maintenance engineers have begun servicing project rooms, providing an understanding of the need for regular maintenance.

Finally, there's the matter of when a project studio crosses the line and becomes a commercial studio. I've encountered a number of operators who've gotten to the point where they've either considered (or have actually started) renting out their facilities on an hourly or daily basis to help cover the costs of increasing equipment inventories. None of them started out wanting to own for-hire studios; they're quite clear about that. But if one

or two anchor clients go elsewhere, they have to find some way of maintaining lease and loan payments, and selling studio time is one of the more obvious methods. This has the potential of occurring more frequently as project studios expand, and crossing that line doesn't bode well for the owner, since it costs even more to add the requisite acoustical space and business necessities required by municipal codes.

The project studio's existence is predicated on a delicate balance of equipment and creativity sold as a

*The emergence of
project studios
produced a leaner,
more competitive
industry, one
where talent is
again of para-
mount focus, while
technology feeds
the talent.*

package, each financially supporting the other. Since a package like that is harder to sell given the subjective requirements of individual clients, reps are going to become increasingly important—reps who can spot the client trends well in advance and help project rooms position themselves for changes. It will be trickier than spotting and coping with technology trends alone.

So much for prognostication. Project rooms are here to stay and they will proliferate. The genie has been out of the bottle for some time and shows no inclination of going back in. The combination of affordable, sophisticated technology and an adroit talent pool assures the project room a place in the industry. But I don't even want to think about what I'll see in the Sunday advertising supplement next week. ■

Dan Daley is Mix's East Coast editor. This allows him to get out of New York every now and then and annoy the police departments of other cities.

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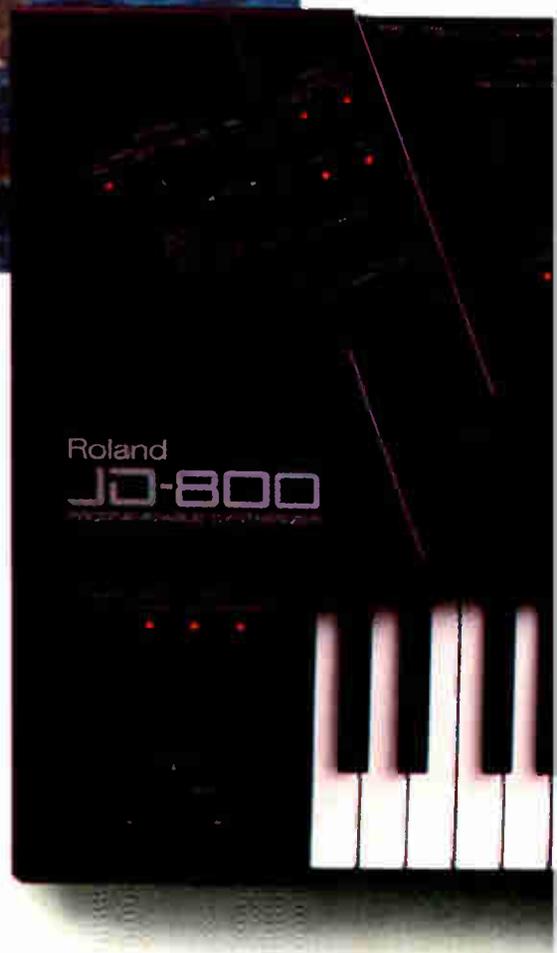
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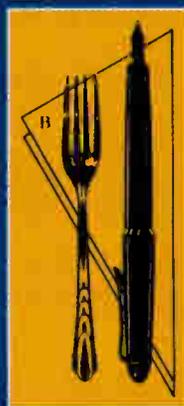
by Mr. Bonzai

CROWDED HOUSE

WHERE THE HEART IS



(Left) Tim Finn, Nick Seymour, Neil Finn, Paul Hester



The night before this lunching I caught a sneak preview of Crowded House at Club Lingerie on Sunset Boulevard—the premiere performance of the turbo-charged band, now with Tim Finn joining brother Neil for the first time since their cult glory days of Spill Ann.

Sublime melodies, superb lyrics, powerful synergy, crisp and rhythmic in the best tradition with a city-billy touch and solidly grounded in heart-felt emotional explorations. The Finn brothers, along with bassist Nick Seymour (who creates the album art) and drummer Paul Hester (who stepped to center stage the night I saw them with a snare drum and improvised a naughty smile-dance), have a night unit and—dare I say it!—a Fish Four way about them.

These guys know how to craft and deliver a song, and the between-songs banter crackles with comic chemistry.

Tim Finn's 1989 solo album nailed me as a fan: from there I searched back to spin line, which Tim formed in 1972 and which included brother Neil from 1978. They were a band that conquered Australasia, straped through the UK charts, and started American audiences with outrageous costumes, wild makeup and the tallest hair since Louis XIV.

Spill Ann called it quits in 1984, and two years later Neil founded Crowded House. Their debut album yielded the hits "Don't Dream It's Over" and the seal-filled "Something So Strong." The follow-up, 1988's *Temple of Low Men*, featured the immediate standard "Bet-

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find a DAT recorder with a good built-in A/D, went out and field tested the current crop of outboard A/D converters.

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ter Be Home Soon" and the hot singles "Into Temptation" and "I Feel Possessed." Early this year, there were plans for a Finn brothers record, and Crowded House was midstream on their new album and—presto—it all came together in a Mitchell Froom co-production, featuring the Finn brothers' compositions "Four Seasons In One Day," "How Will You Go?" "It's Only Natural" and "There Goes God."

So now I am waiting with anticipation, sitting alone in the famous "fish" lounge at A&M Recording Studios. One entire wall is a miniature reef, festooned with sea anemones gently swaying in the underwater breeze. The only reading matter is a stack of manuals on aquarium maintenance and the proper handling of strange fish. Here comes the band...

Bonzai: So, the album is done?

Neil: Yes, it's just been finished as we speak.

Paul: Digitally edited.

Neil: We worked out our gaps.

Paul: Down to the last millisecond. There are some fantastic gaps on this album.

Neil: It's the first time any of us have been involved in gapping a record.

Bonzai: That's important, isn't it—that critical space between the songs?

Neil: Yes, it is important, but it's usually left as an afterthought. We just happened to be around and willing to do it.

Tim: Normally, you just like to get out of town, but since we're staying through tomorrow, we thought we'd go the limit.

Bonzai: What surprises are there on this new album?

Nick: Paul is singing a song on this one.

Bonzai: Paul sang the other night at the Lingerie showcase.

Paul: Yes, that's the tune: "Italian Plastic." And Tim takes lead vocal on one song and sings throughout the album.

Mitchell Froom: [as he walks by the lounge] You guys are losers—sod off!

Bonzai: Wasn't that your producer?

Paul: Yes, he's off to other projects now, one with an all-girl band, I believe. [shouting] Good luck with Julio! We love you! [Bruce Springsteen walks by]

Paul: Hello there!

Springsteen: How ya doin'?

Bonzai: Could you join in the interview?

Paul: Need a publicity boost?

Bonzai: Have you heard the new tracks?

Springsteen: No, but I've heard the old stuff—love that last record, too. So, how'd the gig go the other night?

Neil: Great. Yeah, it was good.

Springsteen: You had a good time?

Nick: Very loose, actually, a lot of fun.

Paul: We wrote a song onstage during the encore, dedicated to the young swimmer Haley Lewis.

Springsteen: You guys finished your record?

Neil: Yes, right this minute, with the gaps and all. And you're nearly finished, too?

Springsteen: Yeah, just about...I'm hustlin'.

Neil: We'd like to get to some radio stations before they dive into your record.

Paul: Maybe we could slip our record into your jacket cover.

Springsteen: You know, one of my early records ended up in a Barbra Streisand album jacket. They went out before the release date, accidentally. People were bringing them back, wondering, "What is this?"

Neil: Barbra's voice has really changed.

Springsteen: Hey, good luck with the record. [He exits stage left.]

Bonzai: Well, well, what an...

Neil: Auspicious beginning.

Bonzai: New beginnings...This album is a brotherly reunion, isn't it?

Tim: We sang together in Split Enz, but we've hardly ever written together before. Neil and I wrote a bunch of songs before this record because we were planning a Finn Brothers project, and then we decided to merge with this album. We just jumped into it and called it Crowded House.

Neil: It was feeling schizophrenic for us, working on songs for two separate albums—we didn't know which hat we had on. We needed to make sense of it in that regard.

Bonzai: Crowded House, in commercial terms, has done a lot better than Split Enz, hasn't it?

Tim: Oh yeah. Split Enz were never more than a cult band here.

Bonzai: But the biggest band ever to come out of New Zealand.

Tim: True, but New Zealand is a pretty small country. As far as making a dent in this country, it's Crowded House that did it. Neil is the only New Zealander who's ever done anything on the charts

here.

Bonzai: Tim, were you the first to leave Split Enz?

Tim: Yes, I had made a solo record that did well, and I got a taste of something apart from Split Enz. It had been 12 years, and I think if I hadn't done that, I would have stayed with Split Enz forever. We were very close as friends, a family thing, a quest to take it to the world. But I think that 12 years is long enough for any group. Neil carried on for another six months and did another album.

Neil: We did the final album, and Tim joined in for the final tour. Then Paul and I decided to form a smaller band, one which wasn't weighed down with the baggage of the past. We jumped straight away into Crowded House.

Paul: The fundamental difference was that Neil and I came to Los Angeles with a tape and got a deal with Capitol Records. We signed with them directly, whereas most Australian bands get deals in Australia for release in America. Sometimes you don't get the support you need.

Neil: Too many middlemen.

Bonzai: I have to admit that I was introduced to all of the music through Tim's last solo album. I've been known to subdue friends, strap them into the back seat and drive around for hours listening to the record until they are true believers. It whet my appetite for all of your various musics.

Tim: Odd. It's usually the other way around.

Bonzai: Remarkable material, especially the song "Parihaka." Can you tell me about the history in the song?

Tim: It's about a Maori chief, Tewhiti, a non-violent protester way before Gandhi in the late 1800s. My sister gave me a book called *Parihaka* and urged me to write about it. She was so obsessed that I had no choice but to go away and write a song. I usually write songs that are directly connected to my experience, but I felt it through her.

Neil: It goes beyond a Maori story. It's a story about struggling against great odds.

Tim: Without weapons. And his words live on. I did hear once that the song was played at a Maori protest gathering, but we have less contact with New Zealand these days.

Bonzai: So New Zealand is no longer your home base?

Tim: We go there twice a year to visit our family. We all live in Melbourne, Australia, now.

Bonzai: How do you look at the rest of the world from Down Under?

Tim: There is a great feeling of distance.

Bonzai: How did the isolation affect your formative years, musically?

Tim: I used to feel that everything in the Northern Hemisphere, especially English, was incredible. They were gods, like the Beatles, The Kinks and other British bands. I suppose I thought they were even greater than they really were, 'cause they were "up there." I was striving to reach those standards. You look up to an older brother, or a father figure, but eventually realize they are just human beings.

Neil: We were part of a British culture, but cut off completely from Britain. And we clung to things like Christmas pudding, big Christmas dinners—and December is summertime in New Zealand. We had Monopoly games with the London street names. All of this had tremendous romance for us, a connection with our past.

When we went to England for the first time, I was walking around with rose-colored spectacles. Then we went to the old Marquee Club, where The Who had played, and it was such a dump. I instantly lost my romance for the British music scene. Take the band out of the club and you've got nothing.

Bonzai: Is the Finn family a musical family?

Tim: Mum enjoyed a singsong, but in terms of performance, Neil and I were the ones dragged out to sing for the relatives. We seemed to have some ability.

Bonzai: How old were you?

Neil: Pretty young. I remember singing when I was only the height of the adults' kneecaps—singing to kneecaps.

Bonzai: While you were setting up the other night, the Finn brothers did an *a capella* Everly Brothers number, "Dream." Do you feel a debt to the Everlys in your brotherly harmonies?

Tim: People have said that, but I think it's just because they were brothers, too. The Bee Gees were a much bigger influence on me—I'm talking about the early Bee Gees, pre-*Saturday Night Fever*. But I do know a few Everly Brothers songs.

Neil: I appreciate them more now than when we were young.

Tim: Influences change over the years, but I think that the ones you start with—the ones you burn for as an adolescent—those passionate feelings



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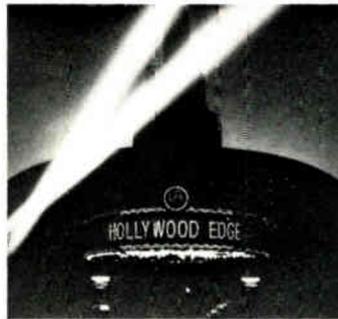
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Bonzai: Tim, how much older than Neil are you?

Tim: Six years older.

Bonzai: Neil, did you look up to your big brother?

Neil: Until I was 14 or 15, I idolized him. I have to swallow my pride to say that. He was doing these incredibly exotic and exciting things, and I was a youngster looking on, dying to get to the age where I could do them, too. I was keen on music from an early age, and as a result of Tim, I learned how to play. Then he formed Split Enz, which in New Zealand in 1972 was the wildest thing you could imagine. Even if I hadn't been his brother, I would have thought it was the wildest thing I'd ever seen. Sitting in on rehearsals was completely inspirational. I watched them get it under way, and when I turned 18, I was asked to join the band.

Tim: Neil was very young, and in many ways didn't have that natural passage from boyhood to manhood. He was a boy and then suddenly he was in Split Enz with all these older guys. I think it was with Crowded House that Neil made that transition. By doing that and becoming incredibly successful, he carved his own path once and for all.

Bonzai: Nick, you do the album art. Did the art side of your life come later?

Nick: From the beginning, I wanted to be an artist. Mum and Dad had given me music lessons, so I fell into it naturally. But I wanted to go to school to be an artist.

Bonzai: It's unusual for a band to do their own album art.

Tim: It's great when it's self-contained, as it was in Split Enz. But it gets complicated when we are faced with deadlines. Nick gets shit-canned if he's late, and yet he's part of the band and we're all mates. But the advantages are huge. You have something that has a real identity.

Nick: It creates more confidence in the record company, too, because they don't have to shop out the creativity. I've also directed some of the videos. There is a feeling that the band can promote the songs in other areas.

Bonzai: Any comments about Mitchell Froom, your producer? Who is this Froom guy?

Tim: He's just done three albums in rapid succession.

Neil: Elvis Costello, Richard Thomp-

son and ours. Really strong records, but he feels like the little guy at the window who has to stay home while all the other kids go out to play, 'cause we're all going off on tour.

Mitchell is a very handy guy to have around. He was heavily involved in the first half of the record before Tim joined. Then the band did a lot of work back home in Australia at Tim's studio. We brought the tracks up to a certain level, and then Mitchell joined us for the last six weeks. We felt we were due for an objective ear. Mitchell came in and did a beautiful job finishing things off, and then Bob Clearmountain mixed them.

Mitchell is a very musical guy, far more so than many who claim to be producers. He gets involved in arrangements and song structure, makes suggestions for the odd chord change here and there. In some cases he does hardly anything, but he's got a solid opinion all the time. In the studio, when everyone is wavering, he's good for a consistent opinion.

Tim: Even if you don't agree, it's good to have someone who is clear, someone you can bounce ideas off. And he makes himself indispensable with his keyboard collection. His musical talent is unquestionable, but he also has all these old, quirky keyboards—Chamberlain, Optogon, miniature pipe organ and things like that. When you hear them in a track, they sound great. But to get them, you've got to take Mitchell. [Laughs]

Neil: His wife has gone very dodgy on him because he's invested all his money in these weird old keyboards. He's got two Mellotrons, three Chamberlains, an old Cox organ with a light show display, and his latest is a Clavoline—hasn't been used on a record since "Baby, You're a Rich Man."

Bonzai: All these arcane instruments sound like a backlash against the digitally sampled sounds.

Neil: There is something innate in the sound of digital pianos. There is not one that comes close to a real piano to our ears. We prefer the Yamaha CP-70, because it's built like a real piano.

Paul: Tchad Blake, our engineer, has a fantastic collection of old vintage guitars—some from pawn shops and Sears catalogs.

Neil: Cheap ones. I've gone out with him and now have quite a good stock myself. You get distinctive sounds. Everyone is buying the

Gretsches, Gibsons and Fenders, but there are Silvertones and many other old beauties.

Paul: We took that approach with instrumentation and it really helped, made it a lot more fun. And you know a lot sooner if it's the right sound or not. You don't spend all this time messing around with some unit, punching in all these variables.

Bonzai: Where did you record?

Tim: All over the place. Some of it here at A&M, some of it at my studio in Melbourne—very reasonable rates, by the way, and quite famous for stunningly attractive backing vocalists.

Neil: We did some at Sunset Sound Factory, Ocean Way. And Bob mixed some of it at Record Plant.

Bonzai: With this new album, I would guess that after 20-odd years you're finally all going to be launched into super-megastardom. [Entire band cracks up]

Neil: We'll go with that prediction.

Tim: We're very excited about the new album, actually, barely suppressed hysteria. We're a bit burned out after working so hard, but our imaginations are quivering with excitement. As an overall body of songs, it's by far the best thing I've ever been associated with. Having been outside Crowded House, and seeing them many times—they were definitely my favorite band—to have joined them now is great. We just have to have a few more tantrums and arguments to sort it all out.

Bonzai: You were joking onstage the other night about all living together in the same house here in Los Angeles...

Neil: Yes, quite an experience—six weeks we have all been living together. But we have always been lucky in finding great houses when we stay in L.A.

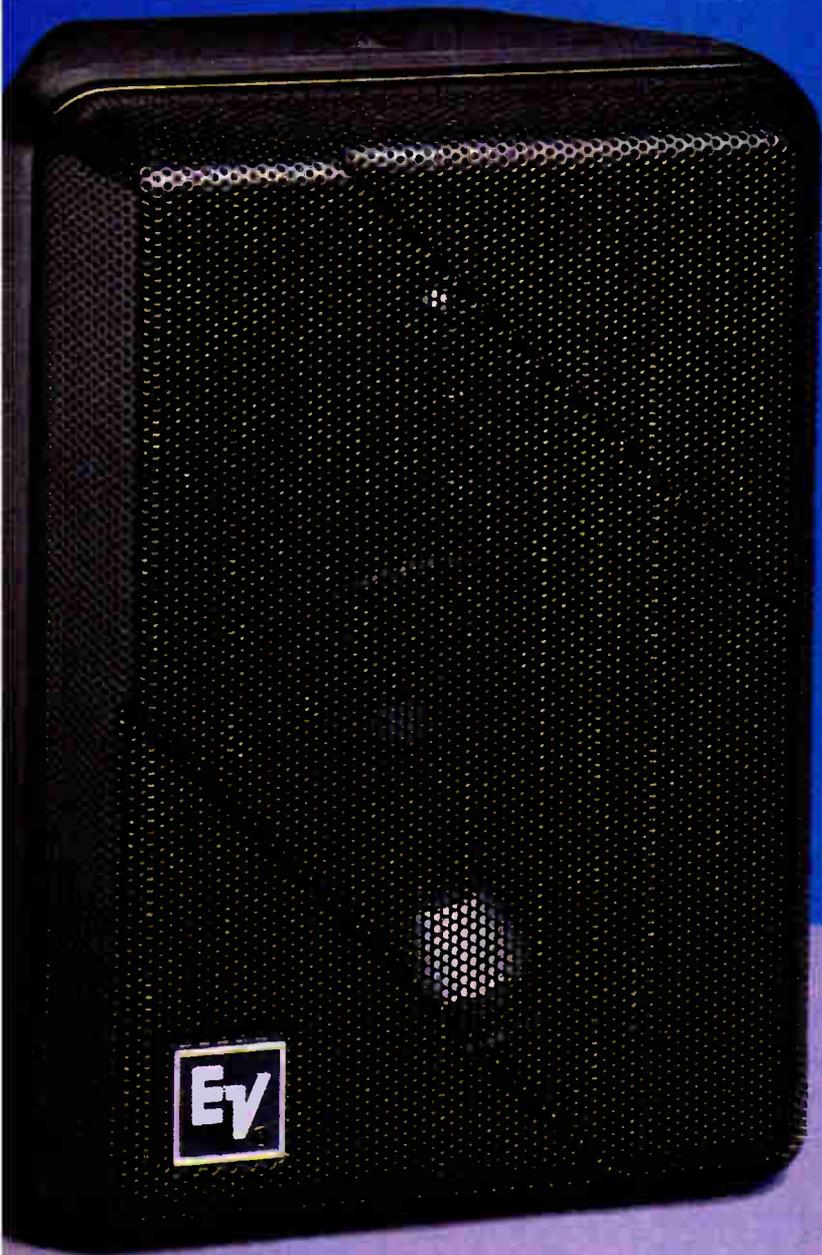
Paul: We've got this great house with one of those Jacuzzis, so we've been having one of them every night. We're practicing being famous. Nick is the most advanced—I did actually spot Nick *in* the jacuzzi *with* the mobile phone. He's the only one to have thought of that.

Tim: That's about the extent of our rock 'n' roll bacchanalia.

Paul: We've obviously got to practice more if we're going to get seriously decadent. ■

Roving editor Mr. Bonzai is the author of Kiwis, Emus and Other Tasty Birds from Down Under.

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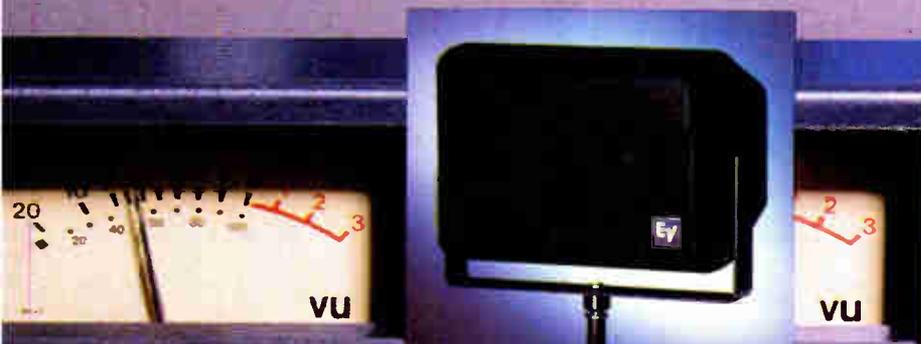
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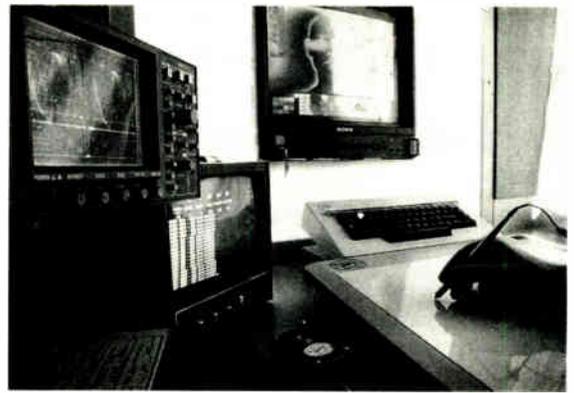
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Left, The Edit One suite and (right) the Quantel Paintbox at Videolab in Sydney, Australia.



—FROM PAGE 68, AUSTRALIAN POST

Graphics Workstation from Quantel to its stock late last year. The graphics potential of Harriet includes painting, retouching, roto-scoping, video effects, perspective, stencil work, multi-layering, cel and frame animation, and custom wipes and dissolves.

There's a strong emphasis on audio at Apocalypse: three full-time audio directors and four studios containing hardware that would put many Sydney recording studios to shame. Apocalypse has an automated 60-channel Series 34 Sound Workshop desk with an AMS AudioFile driving a 48-track Sony digital tape machine, an Adams-Smith AV 2600 synchronizer system with U-matic, plus a full complement of outboard gear and comprehensive music and effects libraries on CD.

According to Skillman, "There's always been a perception that a video post house can't be used to produce quality audio. It's a perception that the often-ailing recording studios in a competitive environment like to foster—that the only place to make quality audio is in a studio." However, the importance of audio at Apocalypse is unmistakable. The facility handles the production or post-production of more than 100 music video clips per year, as well as a huge number of television commercials.

Videolab

Videolab's Sydney facilities include two telecine suites, two online and three offline edit suites, two audio studios and a graphics workstation. The clientele is 70% commercials and 30% television work, including two or three major television series per year.

The facility was hit hard by the downturn in dollars from the advertising agencies—its major clients. According to Videolab general manager Peter Bowlay, "Last year was the worst this industry has seen in 20 years, and I think it will take at least another 12 to

18 months to stabilize. We've had times recently when we've been overloaded with work for three weeks, and the next week we'd have nothing. It's just too unstable."

Videolab is now setting its sights on Hollywood through an association with Paramount, a company they've dealt with since doing rushes and transfers for the *Mission Impossible* series. Videolab wants to be *the* source for film and television post-production in Australia. Their seriousness is evidenced by the recent purchase of a Montage Digital Video Editing System—a popular system in Hollywood and the first of its kind in Australia.

It's an ambitious move in these troubled times, but Bowlay notes that "companies like Paramount expect the best and must have confidence in the equipment you've got, and the Montage is regarded as the guru of machines in Hollywood."

Other editing equipment at Videolab includes a Rank Cintel Mk3C telecine, a Kinesis telecine, CMX 3400x editor, Studer mixer, Super Scribe character generator, Quantel Paintbox and Abekas A53.

Videolab has two extensive audio suites, with Edit One featuring a fully automated 64-input Harrison Series-Ten console, Editron 500A synchronizer, Studer A800 24-track recorder, plus an extensive CD sound effects library. Edit One specializes in television miniseries, telefeatures, documentaries and corporate audio post. Edit Two is devoted to commercial spots, documentary and corporate audio post, and contains equipment such as a Soundtracs CM4400 console, Editron 500A synchronizer and Studer center-track recorder.

According to Bowlay, "We place a high emphasis on audio—you can't afford not to offer clients the complete package. It's to the client's advantage to do everything in-house, because then we look after all their time code,

which makes it easier to trace problems to the source."

Pro-image

Pro-image's Melbourne facility is part of the Pro-image Group—Australasia's leading network of post-production facilities. The parent company owns sister production houses in Adelaide, Auckland and Sydney (Apocalypse). Pro-image offers an impressive range of production and post-production services, including editing, film-to-tape transfer, a duplication division, a fleet of outside broadcast crews and trucks that record major sporting and concert events, and even its own home video company, CEL.

Edit One features a Sony BVE-9000 computer editor, Grass Valley GVG 300 video switcher with Omni key and key extenders, 2-channel ADO and Ques-tech digital effects, four 1-inch tape machines, and CCD color and mono cameras.

Edit Two and Three are equipped identically, with ACE 200 computerized editing systems, Ampex Century 3M/E row video switchers connected to four VPR-3 1-inch VTRs with Zeus, ADOs with Concentrator and Infinity, CCD color and mono cameras, plus Betacam and Betacam SP capability. It's an impressive array of equipment, but general manager Robert Osmotherly believes clients are attracted more by the people than the machinery.

Nevertheless, Osmotherly is especially proud of the two audio suites—the main one boasting a Harrison Series Ten B automated console with Editron 500 synchronizer linked to a PCM-3324 digital 24-track and Otari MTR-90 24-track, with a range of outboard gear and video synching capability. Audio Two complements the high-end Audio One, and is equipped with a 16-channel MCI auto-mixdown desk and MCI 24-track with Editron 500 and outboard equipment.

—CONTINUED ON THE NEXT PAGE

AAV

AAV Australia, also in Melbourne, started out in video post-production in 1975. The company has post-produced 35,000 television commercials and a huge number of television programs, feature films, documentaries and corporate videos.

AAV's extensive facilities consist of two telecine suites, four online and one offline edit suites, an audio suite and a fully configured studio. Equipment includes two Rank Cintel Mk3 telecines, a CMX 3400A editing system, Chyron Super Scribe and an Editron 500. On the audio side, AAV has an automated MCI console with an Editron 500 synchronizer driven by a Sony PCM-3324 24-track digital recorder.

"Technically, we continue to be at the forefront," says AAV general manager Ted Gregory. "Creative clients



Engineer Devon Rietveld and engineer Makoto Kubota at Singapore's Form Studios.

have ideas that we have to make work, so we're technically innovative in developing our services. For instance, we've recently added a couple of black boxes to our Rank Cintel chain, which enables us to get program rotation of the image and a ripple effect.

"We're after nothing less than the highest possible standard of creative services, backed up with the latest technical facilities. In doing this we provide communications solutions for a range of clients who require anything from a simple corporate video to a big-budget special effects television commercial or a giant film or television program."

The post-production industry Down Under might be going through a difficult period, but the real winners are the clients, who can take advantage of world-class post-production facilities for Third World rates. Australian post-production facilities are as much as 35% cheaper than their U.S. counterparts,

and some facilities and staff equal or surpass the American standards of quality. Add to that the incredible array of locations—endless beaches, lush tropics, eerie outback, bustling cities—and the reasons why so many producers and directors are making the hop across the pond are manifold. ■

Cameron Craig is a graduate of the College for Recording Arts, San Francisco, and is currently working as a freelance writer and publicist in Australia.

Pacific Rim Bits & Pieces

Singapore's Form Studios Has Substance

San Francisco Bay Area engineer Devon Rietveld (whose engineering credits include Santana and the Doobie Brothers) recently traveled to Singapore to mix several projects for Japanese producer Makoto Kubota (who has worked with Asian acts Dick Lee and Teardrops).

"I was brought in to mix an album for the Indonesian artist Mellyana, who's on Wave Records [distributed by Sony]," Rietveld explains. "It was very interesting because the band takes folk songs from different areas of

Indonesia and re-does them in a contemporary way. I also did some mixes and remixes for a Singaporean artist named Jacintha. She does an amazing variety of songs, from local music to ballads—very interesting and pretty music. The third mixing project was Kikusuimaru Kawachiya, a Japanese band whose vocalist sings in an 800-year-old traditional Japanese style.

"We worked at Form Recording Studios, a beautiful studio with an SSL Series G console—totally up to par with anything we have here [in the U.S.], although we had to work to find all the outboard gear we needed. I mixed to both analog and DAT, but since there was no digital editing or gear rental facility yet in the area, I had to do all my editing on analog tape. Small things we're used to working with here are not necessarily standard there, but the studio staff was very nice to work with and very attentive to our needs. I worked 16 days with two days off. Needless to

say, I didn't see much of Singapore!"

Although the area has an enormous pool of talent, the markets are still being developed for its music both at home and abroad. "I went to record stores on my days off, trying to get some local music," Rietveld says, "but it was very hard to find, although everything from America is easily accessible. The culture has advanced technically very quickly, but their music business hasn't had the time to develop that ours has. But [producer] Makoto Kubota is really involved in the musical development of Southeast Asia, and has a real love of the area and its music, and he's trying to bring that to the attention of the Western world."

The artists were interested in Rietveld's Western perspective on their music. She recalls, "They'd ask me 'Do you like it? Do you understand what we're trying to do? Would Americans want to listen to this?' They're really trying to find their own musical voice. Because we have such a strong musical community here, it's very hard for someone from Asia to break in, although I am seeing more people opening up to artists from around the world. Music is the common language of the world—even if not every one can speak it, everyone can hear and try to understand it."

—Rudy Trubitt

Digital Audio Production System for China's Hebei TV

Digital Audio Research's recent sale of a SoundStation II Digital Audio Production System to Hebei TV in mainland China is the first disk-based digital system in that country.

One of the more than 20 provincial broadcast centers located throughout China, Hebei TV's audience is in excess of 50 million viewers. Based in the capital of Hebei province, southwest of Beijing, the Hebei TV facility is a state-owned-and-operated station and receives national programming from China TV. The balance of its broadcast program material (more than 40%) is developed and produced locally by the production and engineering staff.

The Hebei TV SoundStation II is an 8-channel system with four hours of hard disk storage, machine control and DAR's Time Warp (time compression/expansion) feature. In addition to audio-for-video editing, Hebei TV is using the system extensively for dialog and foreign language dubbing and music recording.

—CONTINUED ON PAGE 75

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Otaritec Hosts Japanese Audio Fair

Over 300 professionals from the video post-production, broadcast, music recording and sound reinforcement industries attended an Audio Fair sponsored by Japanese pro audio dealer Otaritec in Tokyo on March 13.

The one-day event, which took place at the Tokyo Hilton, featured a functioning audio sweetening setup that used Otari's DTR-900 tape machines, a Trident Vector 432 console with Otari's Diskmix-3 Moving Fader automation, and Genelec monitors. Otaritec also recently installed the first Trident Vector in Japan, a 40-input Trident Vector 432 console, at Tokyo's Vivid Sound Corporation, where it is being used for record production on the Vivid Sound label.

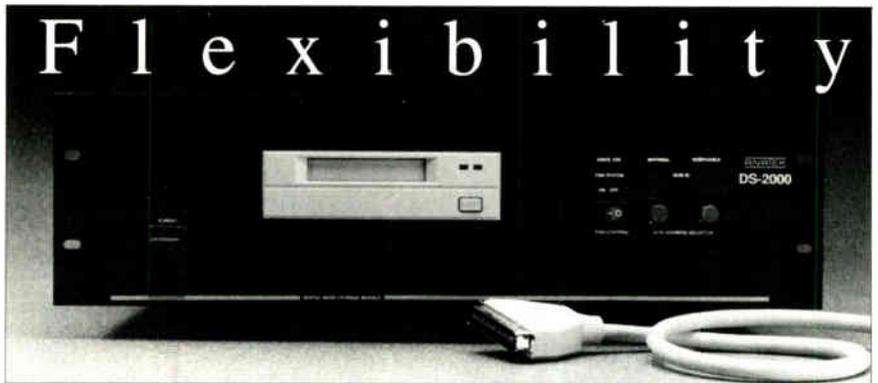
Pro Audio Asia '91 Moves to Singapore

Singapore is the host city to this year's Pro Audio Asia exhibition, which is scheduled to take place July 10 through 12 at the World Trade Centre. The exhibition has become the largest event designed to serve Asia's pro sound industry.

An added feature to the exposition, now in its third year, is a set of technical seminars. The seminars are designed to provide a unique educational opportunity for industry visitors to exchange views with the pro sound experts. The event is organized by Business & Industrial Trade Fairs Ltd.

Asia Notes

Osaka's Kansai TV, and Tokyo post-production facilities Prosen and Daicolo, have each installed 8-channel DAR SoundStations with rewritable optical disk storage. Daicolo has a unique application for its SoundStation: The studio uses the system to produce audio for commemorative videos that are distributed to the graduates of over 10,000 schools throughout Japan. Daicolo recently introduced the video format to replace the traditional photo yearbooks it previously produced... Tokyo's Studio Hymeqs purchased a 66-module Harrison SeriesTen B console for its video post and multitrack audio facility. The board—the first Harrison SeriesTen B in Japan—was delivered by Continental Far East Inc., Harrison's exclusive Japanese dealer... Two Japanese facilities—Tamco Studios and Toppan Studios—received Neve consoles. A VR60 went to Toppan, while the To-



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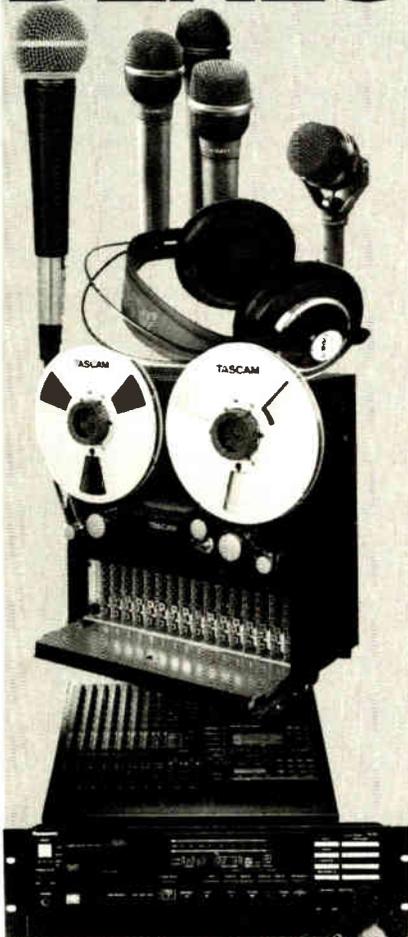
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kyo-based Tamco received a VR48 desk...One of Japan's three major private television networks, N.T.V. Video Corporation (N.T.V.V.), purchased a 32-voice, 32MB, 8-track NED PostPro SC system for in-house creation of music and sound effects... A-String Recording Studio in Taipei, a music recording facility in the Republic of China, received Audiomation's new Uptown 2000 Moving Fader console automation system. Audiomation's Taiwanese distributor, Linfair Engineering & Trading, fitted the 48-channel system to the facility's Studer 900 console...A Neve VRP60 console with Flying Faders automation was recently installed at Asia Television in Kowloon, Hong Kong...

Potpourri

One of the largest and most successful TV commercial post-production companies in the Far East, Video Headquarters purchased two DAR Sound-Station systems for its Singapore and Malaysia facilities...La Musique Studio in Mahalaxmi, India, recently took delivery of BSS DPR-402 Comp/Lim/De-esser and DPR-504 4-Channel Noise Gate processors to assist music production for TV, film and jingles... Early 1991 has also seen the supply of DPR-402 and DPR-504 processors, plus the new DPR-404 4-channel processors, to Sargam Studios in Bombay. The Government of India Films Division has installed four each of the DPR-402 units and DPR-502 Dual MIDI Noise Gates for multilanguage mixing and music scoring. ■

—FROM PAGE 69, LETTER FROM JAPAN
ing and manufacturing services.

The trend here in 1991 is to be capable of producing a complete in-house package, with a price that is fairly reasonable (for Japan) so that young people can afford it. (Contrary to popular belief, most young people here just do not have the yen and are careful how they spend it.) The prices for practice studios range from 500 yen (\$3.70) to 3,500 yen (\$25) per hour, depending on room size and extra equipment needed. Most provide drum sets and amps for bass and guitar. Keyboards are generally extra. Recording prices start at 5,000 yen (\$36+) for 2-track DAT, to 9,500 yen (\$70+) for 16-, 24-, 32-track (digital with MIDI) recording, if you buy a 24-hour block of time.

Sometimes Saddam, Sometimes Hussein

Thank God the Persian Gulf War ended. One amazing thing about the war was brought to Tokyo by the Japanese recording industry. It's no secret that during the war you couldn't give away plane tickets on an international flight from Tokyo. The problem became acute when all record companies in Japan said "no overseas recording." (Tell me that didn't hurt L.A., N.Y. and Pebble Beach!)

Normally about 60% of Japanese recording artists go overseas (especially to L.A., New York, London and Australia) for recording, as well as mixing down. Typically, it is very easy to reserve the studio of your choice in Japan. These places were completely booked out from last October until March. Everyone had to fight to reserve any kind of recording studio at any hour. I even had a very hard time. For example, I was producing a Japanese female singer's gospel album last October. I thought it would be finished by the end of November—my mistake. Even though I looked from the expensive (\$400+/hr.) to the inexpensive (\$50+/hr.), it didn't make any difference. The answers I received from each were, "I'm sorry, but we are all booked out!" I asked, "When will it be available?" I was told, "Not until the war is ended!"

Each studio had a long waiting list of customers. I said, "Don't you think this is great?" They said, "Not at all! This is crazy. I can't even sleep. Because we don't have enough studio assistants, I have to work all day and all night without sleep."

Fortunately, I found a private 24-track MIDI studio for basic tracking, so I didn't have to spend a lot of money. Who could complain? (See bathroom story above). And for mixing down, luckily, I found a better studio through a friend, which had a sudden cancellation. Unfortunately, this reminds me of two associated local phenomena: the bankruptcy of about 300 small companies in February because they didn't have enough workers, and the many overwork-deaths (*karoshi*) of middle-aged Japanese businessmen.

General Facts and Big Figures: Who's Buying What?

The Recording Industry association in Japan announced the gross proceeds of all CDs, LPs and cassette tapes sold in each country around the world for the

fiscal year of 1989 (as quoted from the *Absabi Shimbun*, Feb. 1, 1991). Number one in total sales in these areas is the USA, with \$6.46 billion; number two is Japan, totaling \$3.89 billion; the UK is third with \$1.99 billion, followed by Germany, \$1.65 billion, and France, \$1.29 billion. The UK averages \$35.47 per person per year, with Switzerland, Sweden, Holland, Australia, Germany, U.S., Finland, Japan (\$25.42) and Norway following. The UK is also the country that sold the most single cuts. More LPs were sold in the Soviet Union than anywhere else in the world (most likely due to a lack of CD players), while CDs and cassette tapes were bought mostly in the U.S.—a cool 272 million copies. Japan accounted for 152 million copies. More than half the total amount of CDs and cassette tapes sold in the world is shared between the U.S. and Japanese markets.

Tips On Buying In Tokyo

* Akihabara is the electronics nut's shopping area in Tokyo. Here you find savings of 15%-20% at duty-free shops. However, 30%-50% savings are to be had elsewhere just for the walking and talking, in English (with a little patience).

* Don't be afraid of speaking English in some small out-of-the-way store. Just speak slowly. Almost all Japanese people have had eight years of English, even if most is forgotten. If you are polite and persistent about an item for sale, they will make an effort to communicate its price. Also, watch out for small places upstairs that look like they might sell used or rebuilt equipment.

* Keyboards, DATs, stereo amps, cassette decks at the biggest savings? Sure. Teac, Panasonic, Aiwa and Sony DATs can be found at 50,000-80,000 yen (\$384-\$615) new! Why so cheap? Because they are discontinued models from last year, or they were bought up from bankrupt companies. There are also 100-volt models, which only need a small three-prong adapter that is also a transformer (for \$15-\$20). A good basic strategy is to simply buy the equipment that's made for use in Japan and use a transformer. They are as small as a 300-watt end plug. ■

Paul Jackson, the bass player, was formerly with Herbie Hancock's Headhunters. He now lives in Tokyo, where he operates his own production facility, Think Tank Ltd. When in Tokyo you are invited to fax him at (0473) 79-1878.

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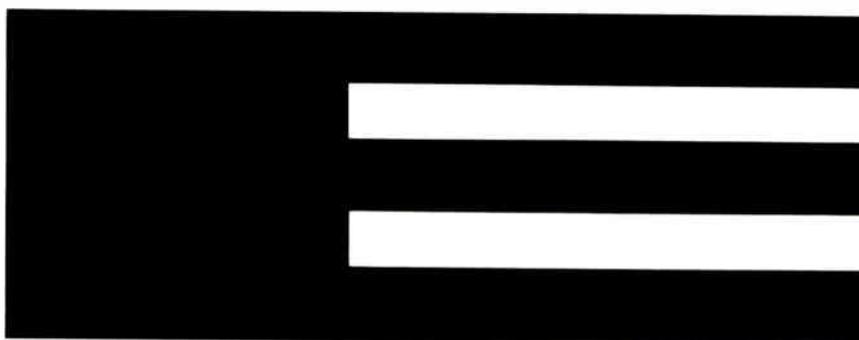
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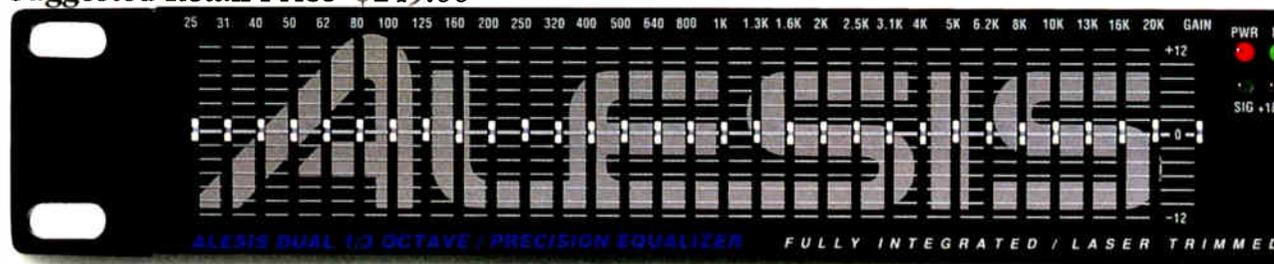
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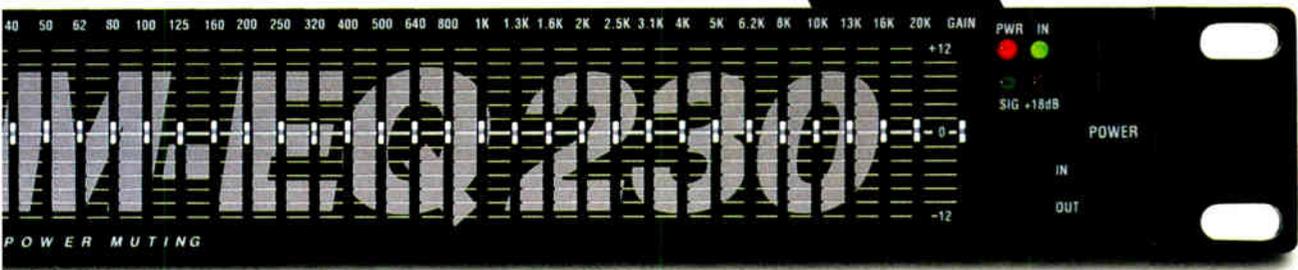
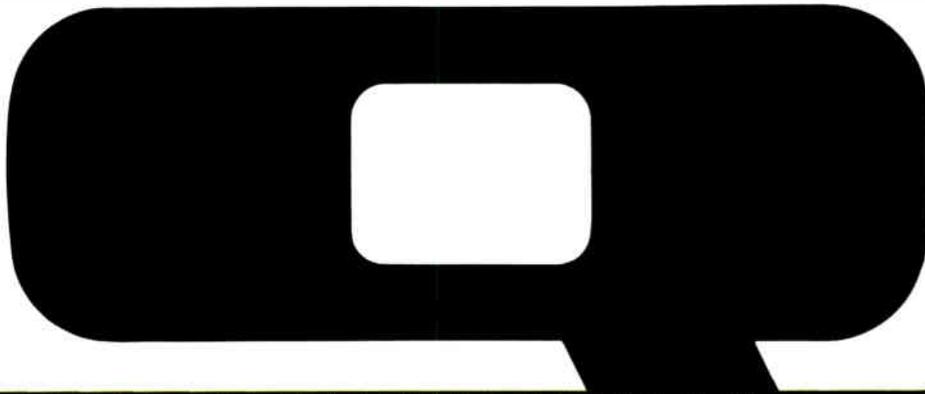
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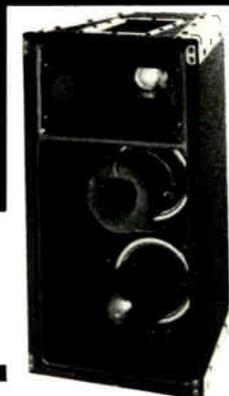
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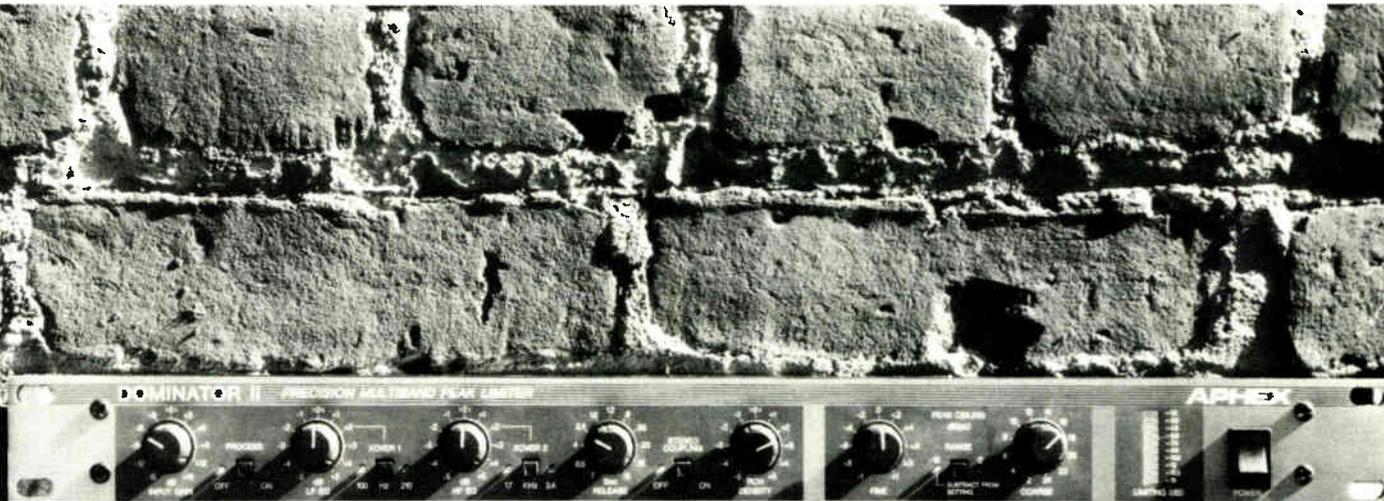
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ing. Then we talked to John Hammond and Don DeVito [CBS A&R men], and he went back out and did it again. Maybe the second time around the bass player played better notes. We chose what we liked. When he worked with Robbie Robertson and The Band, those things were choreographed and yet a lot of it was left open, so that if he just decided he wanted to sing another verse, he could do it.

Mix: Working with Paul Simon or Billy Joel has got to be very different.

Ramone: Definitely. For one thing, with someone like Dylan, you don't sit there with him during the writing process. He doesn't share that time with you, whereas they'll share unfinished songs—a missing verse, alternate chord ideas, things like that. So you're a lot closer to what the songs are about.

Mix: Does that make you feel more removed from him?

Ramone: No. Bob's a very nice man. He's not what you'd call a high-intensity conversationalist, but you don't

need that. You have your moments of privacy with somebody and you enjoy them. But my way of working is not to break that code of professionalism and privacy that the artist sets up, whatever that may be. Dylan treats the people he works with in a completely professional manner. Sometimes the doctor-patient type thing is vital, so that you keep from getting too close. He shares what he needs to.

"I was always fighting to find different ways to get better sounds."

Mix: You've been with Billy Joel for over ten years and at least that many albums. In a case like that, does it become difficult maintaining distance?

Ramone: You do grow closer personally. Billy's my child's godfather. And Paul Simon and I are still close friends—I named a son after him. But

there is a line when you are employed by someone. You keep yourself somewhat at a distance so that they have it clear in their minds that you didn't party the last two nights because you had work to do, maybe some editing at eight the next morning, that was more important. That's what I consider the proper relationship between an artist and a producer.

I've always thought a producer's job is to be the objective director of action; you need to know what's going on with an artist because their emotional state may be reflected in their work, in the change of a lyric, for instance. But you get enough intimacy working with them ten and 12 hours a day in the studio. It's not always necessary to spend the weekend with them.

Mix: It must be kind of strange to get dumped when, after working with someone for a while, they move on to somebody else.

Ramone: When the producer or artist makes a change, the work they did together remains.

Mix: There are three situations in par-



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ticular I'm thinking of. *The Bridge* was one of Billy Joel's best albums, I thought, representing a new maturity in him as a songwriter. The three albums you did with Paul Simon, *Rhymin' Simon*, *Still Crazy* and *One Trick Pony*, were very important albums in his career. And many people think that *Blood on the Tracks* was the last great Dylan album. But each of these artists used someone else for their next record. Why do you think this happened, following such peaks in their careers?

Ramone: Other than the obvious reason of a scheduling conflict, if artists take a new step forward, they are exploring a different reaction from the public as well as within themselves.

In Paul's case, after the soundtrack and the movie [*One Trick Pony*] came out, there were other things in the way of us working together, but we came back together to talk and work on certain things for *Graceland*.

You mentioned artistic maturity. The public's perception of that isn't always immediate. I thought *The Nylon Curtain* was one of the best things Billy had done, but a lot of people started calling it the Nylon *Shmata* [Yiddish for rag—*Ed.*], which I thought was a terrible thing to say to someone who's bared their soul, writing for a year. If we had instead put out *Innocent Man II* or *Return of the Innocent Man*, I think *that* would have been a big failure.

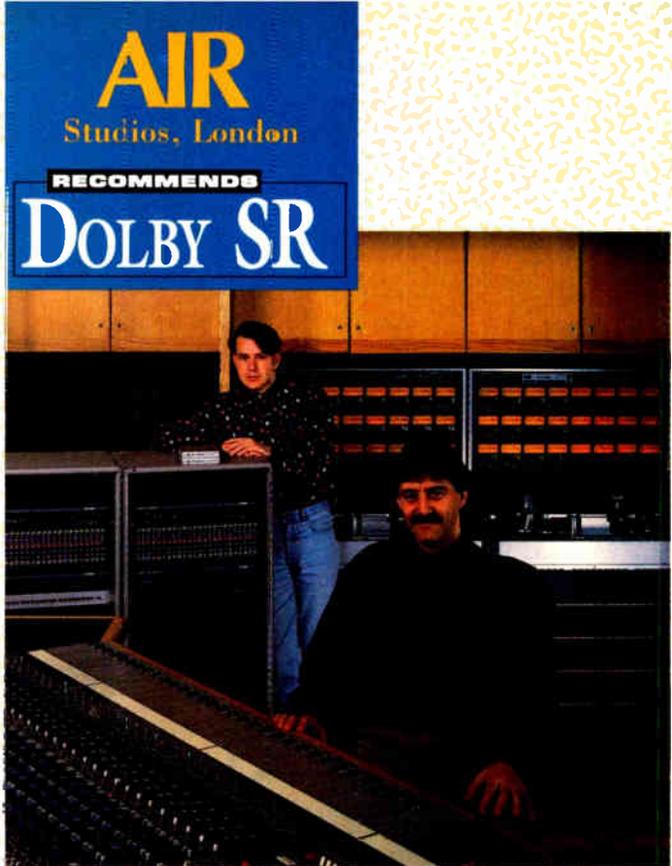
Take Springsteen's *Nebraska*. I don't think that platinumized a lot of people's offices, or decorated their walls, but now it's considered a great piece of work. And it's a transitional album he had to make.

The tragedy of it is, the record business demands that you have hits almost every time out. And if a producer has a relationship with someone over a number of years, at some point the time will come where someone, be it the artist or the producer, will say, "I think I'd better go make a move somewhere else."

Nothing lasts forever. Every time somebody calls me up and says, "I'd like to make another album with you," I'm like, "Oh! Well, great!"

Mix: What kind of training did you have as an engineer?

Ramone: I was very lucky. There was a wonderful guy who taught me, Bill Schwartau. He was what I call a "seat of the pants" guy. And also, I was always tinkering. Sometimes I'd work all



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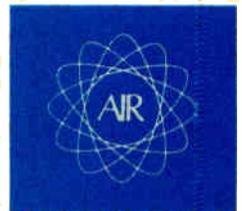
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night and it would be five in the morning and what are you going to do then, go to a restaurant? The hell with that. I'd go in the room and start playing with bias on the tape. Because I was always fighting to find different ways to get better sounds.

Mix: Do you have some kind of bias trick that no one else knows about?

Ramone: No, but I used to underbias my records to achieve a silkier top, but that means that you cannot plant +3s and +8s over zero onto that tape. One of the battles in the early days was with the old machines: The heat factor would mess everything up, so that what you mixed at eleven in the morning and came back to hear at six at night wouldn't be coming back off the tape machine the same. Now I'm a big Dolby SR fan. What I often do now is record the drums at 15 ips SR, and then bump it over to digital. Digital solves so many of the problems I battled with trying to store information on tape. You put it there and it still sounds the same later on in the day or in the project.

Mix: How much attention do you pay

to the sound of the console?

Ramone: I use less console than anybody I know. I go right into the back of the machines; I'm a big fan of the Jensen preamps.

Mix: I read in George Martin's book [*Making Music*] that you were a child prodigy violinist. What made you give up the performing side of music?

Ramone: When I was 12 or 13 years old, I believed that if you were going to perform, you had to be a superstar by the time you were 15 or 16. I played an instrument that was about as popular as a beehive. Playing jazz fiddle and rock 'n' roll fiddle—which I was trying to do—put such a limitation on me. So I went to work in a recording studio when I was 15, and by the time I was 18 I understood a lot more about electronics, and got much more fascinated by the sonic end of music.

Mix: You recorded some of Paul McCartney's *Ram* LP. When it came out I thought it sounded the most like a Beatles record from an individual Beatle.

Ramone: Yes. I was a big fan of McCartney, of course, and of that first album of his, *McCartney*, that he did at his house on a Studer 4-track. When he

was ready to do his next one, he called me up and we did it in New York.

Mix: One thing I'm curious about is the bass—Paul has this real distinctive bass sound that carried over to *Ram* from The Beatles records.

Ramone: Yeah [laughs], I remember that bass! We called down to the front desk at the studio and had them round up all the Pultecs they could get their hands on, and every EQ they had in the place; we also got this UREI parametric equalizer. We just rolled up the bass on everything we could, as much as we could get on disc and know that the bass would be heard on radio.

Mix: Are there any artists/songwriters you like in particular that you haven't already worked with?

Ramone: Sinead O'Connor, Michael Penn, Vernon Reid, Michael Hutchence, Difford & Tilbrook, Melissa Etheridge. Rodney Crowell's work is wonderful. Another guy I think is brilliant is Lyle Lovett. I was a big fan of Lyle; we were about to make a record and then the country people got scared that I would take him somewhere else.

Mix: But your career has been so diverse. Did they believe you can only do rock 'n' roll?

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Ramone: You're typecast from day one as a rock producer.

Mix: But for them to be nervous about Lyle Lovett working with you! In a period of only a few years, you worked with Kenny Loggins, David Sanborn, Dylan, Chicago, Quincy Jones, McCartney, The Band—really all over the map. I can't imagine what the record

who's been doing the record! They've got their hands flying all over the place.

I look for young people. I like people with ballsy ideas. I like people who *understand* reverbs. My argument about reverb with most people is that they spend all this money and they have all these racks and racks of stereo



Left to right: Hugh Padgham, Phil Ramone and Bernard Edwards

company was thinking. You're... you're PHIL RAMONE. There was a punk band named after you...

Ramone: I guess it depends on what kind of executive is in charge now. And that [Lyle's record] would have been the perfect venture for me, you know, the "little big band"—that's the kind of thing I love to do. Fortunately, he's become a star anyhow.

Mix: What is your relationship with engineers when you're producing? How much do you get your hands in?

Ramone: When I hire somebody, I want them to feel they can be creative, and not be intimidated. What I'm afraid of is when they say the same stuff I've heard for 15 years—"I must have my APIs, and I must have my little MXRs, and I must have my tube mics." And I say, "Why? Why can't you survive with something that was built in 1988? Why are you relishing an old tube 47, which you're putting through this awful gain structure that just negates it?"

I'd sometimes rather pick an engineer who's been doing live, because they've had the experience of doing it every day, of miking real drums. And some of these guys that do monitor mixes are better mixers than the guy

reverbs, and everything is bouncing off of left and right. There's no discrete left, no discrete center and no discrete right a lot of the time, and that's when I get on their case. The whole point of all of this stuff should be to create some emotional-sounding spaces. You can't do that unless you know how to use them. People should take the time to learn something about natural acoustics. The best use of the new toys is to really take advantage of spatial effects.

We used to have just EMT plates and rooms for 'verb. When that was all you had, you really needed to know how they worked. Digital has, of course, changed everything: Reverbs are cheap now. You can have a couple of 224s, a 480, three AMSs, some SPXs; it's a nightmare when I think back to how we made records before. It was archaic. But you know, some of those old records still sound good, and a lot of that was the engineers' familiarity with acoustics, with *real* sounds. ■

Dan Levitin is a producer/engineer and writer based in the San Francisco area. He is currently involved with research in brain processes in the perception of music at Stanford University.

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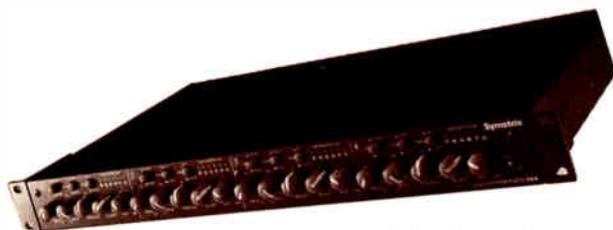


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By incorporating apt-X data compression, digital audio can be recorded and stored on standard 3.5-inch, high-density floppy disks with the Dynamax DCR 1000 digital cart recorder from Fidelipac of Moorestown, N.J. The system consists of a record module and one or more playback units, which resemble broadcast cart machines, with lighted stop, play and cue buttons, along with a backlit LCD display indicating title, track number, time and sampling rate (22.05/24/32/44.1 kHz). Four-megabyte disks offer 74 seconds of 44.1kHz stereo, while 2MB disks are suitable for 30-second spots, IDs, jingles and sound effects.

Circle #285 on Reader Service Card

by George Petersen

PRODUCT

CRITIQUES AND COMMENTS

Yamaha S8M Studio Monitors

Of course, the Yamaha name is no stranger in the world of recording studio monitors. Various incarnations (in consumer and pro versions) of the Yamaha NS-10 can be found in thousands of recording facilities throughout the world. Recently, Yamaha introduced the S8M, a full-range studio monitor at an unbelievable retail price of \$180—per pair! As a self-confessed studio monitor junkie, I had to check these out.

Offered in a black wood-grain finish with a (*non*-removable) black grille cloth, the S8Ms resemble the NS-10s somewhat, but at 19x10.5x8.75 inches, these new models are considerably larger than their cousins. The S8M has a ported, three-way design, with an 8-inch woofer, 5-inch midrange and 3-inch tweeter. All of the drivers have conventional paper cones, and the mid and tweeter elements are the metal sealed-back type.

The back panel features five-way binding post inputs that accommodate banana plugs, bare wire, spade lugs, etc. Mounted on the back of the input

connector is the crossover, a simple 6dB/octave network bringing the mid driver in at 2.3 kHz and the tweeter in at 13.4 kHz. The crossover also includes an auto-resetting circuit breaker that protects the drivers from thermal stress. No mid or tweeter adjustment controls are provided.

A major factor in the S8M's low price stems from an unusual technique in the manufacturing of the cabinets. The drivers are mounted on the *inside* of the front baffle, the grille cloth is stretched taut and stapled on the inside of the cabinet (this explains the non-removable nature of the front grilles), and the sides and back are miter-folded and glued. All of this provides for a sturdy enclosure, but also makes the unit unserviceable. Driver replacement is impossible; no doubt this is why Yamaha incorporates circuit breaker protection into the crossover. Yamaha will replace any unit that fails under the conditions of its limited three-year warranty.

When I started my listening tests, the first thing I noticed about the S8Ms was the binding post inputs. These are

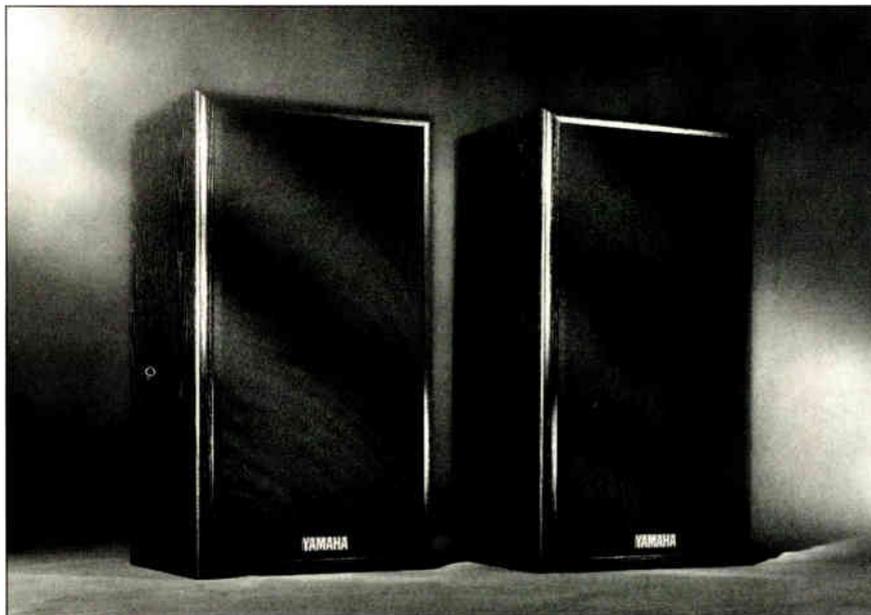


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PHOTOS: JON MIR

JAPAN'S COUNTRY GOLD FESTIVAL

by Bruce C. Pilato

The people of Japan are known for embracing and imitating popular American culture and arts. But a massive country music festival—held last year at the breathtaking Aspecta Outdoor Theatre (the largest of its kind in all of Asia)—may prove to be the most sincere show of appreciation Japan has yet paid to an American art form.

The second annual Country Gold Festival, held in rural Kumamoto, was not only the largest

country music event ever held in Asia, it combined Japanese and American audio and video technology with true Americana. The sight of 30,000 enthusiastic Japanese men and women dressed in full cowboy regalia, clapping and stomping in time to western swing, bluegrass and traditional country songs, is as strange as it sounds, but, combined with a cloudless day and some of Japan's most picturesque scenery, it made this festival a truly magical event.

"The people of Japan are so

gracious and warm," says Ricky Skaggs, who headlined this year's festival. "It's always humbling when you get to perform anywhere people love country music, especially foreign countries. Country music is an international language. Even if you can't understand English, you can always understand the rhythm of the music."

Held in a remote area at the

Above: The Aspecta Outdoor Theater. Inset: House engineer Billy Hawley.



ANOTHER STAR HAS JOINED ARSENIO'S POSSE.

Starr Parodi, keyboardist for the Arsenio Hall Show, wants more than perfection. "I go more for the passion in music, and I want to communicate emotion to the audience," she says. "And any gear that can enhance that process is a valuable tool." That's where our new Akai S1100 prevails.

You see, we've taken the S1000, which is already the standard in digital sampling, and added technology that enhances musical creativity more than ever before. The new 64 time oversampling A/D converters, and the floating D/A conversion process, provides the truest reproduction of your sounds. With a fully expanded memory of 32 megabytes, the S1100 allows over 12 minutes of sampling capacity. It also features built-in SMPTE with cue list programming and a SCSI port for direct connection to hard and optical disks. Not to mention, a built-in realtime digital signal processor.

Starr goes on to say, "We just did a new theme for the Arsenio Hall show, and we did fantastic things on the intro with the new Akai sampler. It wasn't a case of eliminating musicians, but of adding elements that we could only imagine before. Also, I am just finishing my first solo album in which I used the Akai sampler for a wide variety of instrumental, vocal and percussion tracks."

So, gather up your own posse, and see what this star will do for you. See the S1100 at your local authorized Akai Professional dealer today.

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LIVE SOUND

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"We dodged a couple of train wrecks yesterday," says Billy Hawley, house engineer for Skaggs and several of the other acts in the festival. "The toughest part was the language barrier and our inability to handle things quickly," adds Brian Keefe, who was stage manager for the event. "Billy and I ended up staying on each end of a walkie-talkie all day."

"It was like an international forum—we'd go through the translator just to tell something to the Japanese crew," adds Hawley. Changeovers between all seven acts were done at a lightning speed of five to ten minutes. Only Skaggs, who had the most elaborate stage plot, went longer: 18 minutes.

"The audience had to catch the last trains out of Kumamoto," says Hawley. "So we had to get each act on and off at the right time. We knew that if we got behind, it would snowball and there'd be a disaster."

The show was built around a standardized stage set plot that included a universal drum kit and several other universal instrument setups. Bigger acts such as Skaggs, the NGDB and Asleep at the Wheel had their own sound and monitor crews, while the rest relied on Hawley and

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The most pristine state-of-the-art equipment was found in the elaborate broadcast facility located under the stage. The show was recorded and videotaped for high definition broadcast via satellite by NHK, the public TV network in Japan.

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Jimmy Ibbotson, Nitty Gritty Dirt Band, with Japanese fan.



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base of Mount Aso, 90 minutes by car from Osaka and nearly 400 miles from Tokyo, the festival was no easy feat to organize and execute. It featured several established and up-and-coming country acts, including the Osbourne Brothers, the Nitty Gritty Dirt Band, Asleep at the Wheel, Jana Jae and Jon Hansell.

Aspecta was a remarkable place to hold such a concert. Built on several hundred acres, it can accommodate upwards of 100,000 people on the grassy hill that faces the stage. Ironically, because the site's distance discourages audiences and the enormous costs involved daunt promoters, large concert events are a rarity at the venue.

Over a year in planning, this second Country Gold Festival was the brainchild of Japanese concert promoter and country music enthusiast Charlie Nagatani. He introduced the festival in 1989 and has traditionally opened the show with his own country band, Charlie & The Cannonballs.

In addition to Nagatani, who invested a large sum of his own money, the event was underwritten by the Japanese government, Bridgestone Tires and other corporate sponsors. Refugee Management, a Nashville-based promotion and management firm, organized the American participation in the event and booked all the talent.

Country music was first introduced in Japan after World War II, when it was played regularly on Armed Forces radio and performed live on many USO bases in the Far East. Nagatani was 20 years old when he first heard a country band at a USO function.

Shortly afterward, he began playing in his own band of country musicians, and today, Charlie & The Cannonballs are widely considered the premier Japanese country music act. To date, Nagatani is the only Japanese country star to play Nashville's famed Grand Ole Opry.

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biggest priority," says Keeffe. Adds Hawley, "In order to get the house system together, they had to hire three different sound companies, and it's always scary when you come into a system that is a montage. But we're used to budgetary restrictions in country music, compared to big rock shows, so we got through it."

The mains were driven by two 32-channel consoles, a Soundcraft 800 B and a Soundtracs. This forced the house engineer to

wear two separate sets of headphones. "We had enough channels, but it was on two different consoles with more than an arm's reach between them," says Hawley. "You tried to position yourself strategically between the two boards, but it was tough."

Outboard gear consisted of several standard pieces, such as a Yamaha REV7 and SPX90 digital reverbs. The fronts were made up of 24 bass and 24 Hi-pack Eastern Acoustic Works cabinets, powered by Carver and Hill amplifiers.

The monitor system consisted of Yamaha PM3000 consoles, Yamaha 2031 graphic EQs, and EAW SM202T slant monitors.

There was a ten-hour soundcheck on the day prior to the event. All of the artists were able to run through a good portion of their act, and the changeover problems were brought down to a minimum. "One of the nice things about Japanese shows is that there's never a labor shortage," comments Hawley, who credits the all-day soundcheck with the ultimate success of the show's technical end. "It may have been difficult to coordinate it all, but there was always one person for every piece of equipment. That was his or her only job for the whole day."

According to Keeffe, the next festival will be managed differently. He suggests that the Japanese use pre-wiring plots supplied by the U.S. sound crew, and believes signal processing gear should come with each act, in order to satisfy specific needs.

Although the various crews occasionally scurried around in a near-panic, the concert itself was—from the audience's perspective—flawless. The crystal-clear audio of the event was matched by the brilliant weather. All of the acts were very well received (with perhaps the loudest cheers going to the Osbourne Brothers, who play traditional bluegrass), and there were no major technical gaffes.

The festival ended with all of the performers and crew joining together onstage to sing a rousing version of "Will The Circle Be Unbroken." At precisely 6:45 p.m., as indicated in the pre-production meeting notes, the festival ended in a blaze of fireworks. Watching the crowds file out in an orderly manner, Nagatani was happy to once again see his dream of bringing country music to Japan become a reality.

"I want the people of Japan to know what wonderful music country really is," he says. "I'm not thinking of the business. I want to do this as a cultural exchange." ■

Bruce Pilato is a Mix contributing editor.

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Graphic Equalizer

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SC131:
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MT66:
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MT66	<ul style="list-style-type: none"> • Stereo or dual mono operation • "Soft knee" compression characteristic • Compression adjustable from 1:1 to infinity • Up to 25 dB gain reduction 	<ul style="list-style-type: none"> • Freq. Response: 20 Hz to 20 kHz • S/N: 95 dB
X324	<ul style="list-style-type: none"> • Stereo 3-Way mono 4-Way • Summed Mono Sub output in stereo mode • Switchable 12dB/Octave high-pass filter at 40 Hz • Phase inversion switches on all outputs 	<ul style="list-style-type: none"> • Filter Type: 18 dB/Octave Butterworth state-variable • Freq. Response: 10 Hz to 30 kHz, ± 0.5 dB • S/N: Less than -90dB
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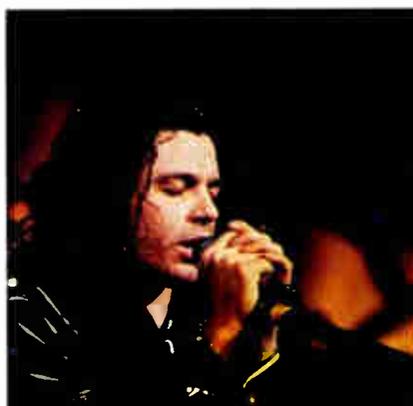
This chart profiles the four best-selling Audio Logic products. But that's only the beginning. For a hands-on demonstration of the entire Audio Logic line, visit your professional audio dealer or sound contractor. Or write for

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by David (Rudy) Trubitt

SOUND CHECK



Pacific Rim Notes

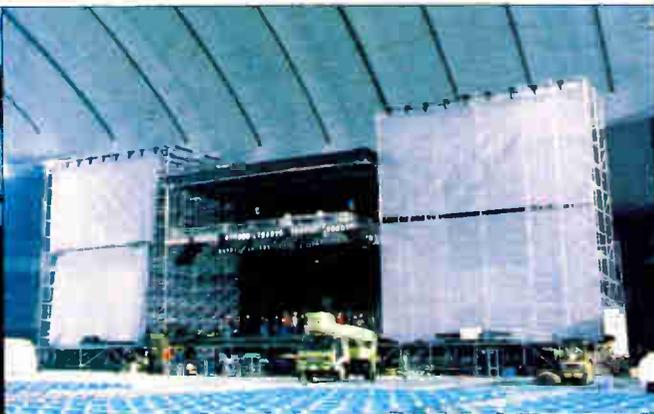
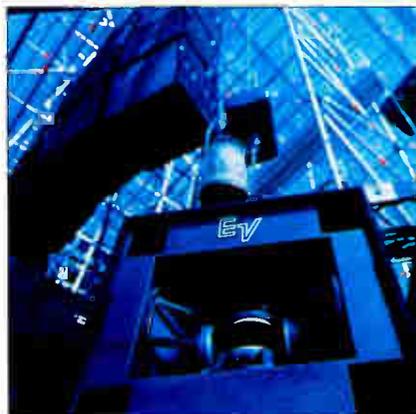
The Singapore Hard Rock Cafe recently installed an EV sound system utilizing 100 EV S-30 compact systems. The Cafe uses DeltaMax and EV floor monitors for live performances... University Sound has been making inroads into Japan with several major public space installs, including the Tokyo Metropolitan Gymnasium, one of Japan's largest sports facilities. University also placed equipment at the Pavilion of New Zealand. The facility now has weatherproof University equipment in four areas. EV equipment has also found its way into that facility... Almost within this issue's Pacific Rim focus is the Soviet Union, where Interkontakt Service



Colin Ellis handling FOH duties with **INXS** on their current tour. This is his tenth year with the band. Showco's providing the gear, including the Harrison console pictured.

rental company recently purchased a 30kW sound system from Italy's Outline. The system includes over 30 of Outline's Formula System loudspeakers and Lion's LF Series power amps, active crossovers and EQs. This system has been used at the 50,000-seat Olympic Stadium in

Moscow... Electro-Systems of Singapore recently provided a large Nexo sound system for that country's Ministry of Defense, as well as a number of systems in regional discotheques and hotels. Nexo opened an office in Singapore to better serve the region...



MC Hammer's recent Tokyo Dome sellout show also showcased the largest **MT-4** system ever assembled, employing 120 cabinets.

PHOTOS: STEVE JENNINGS

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GETTING IN AT THE GROUND FLOOR

Sound Reinforcement Services to Market Mirror System in U.S.

Rocky Norton, formerly of Scorpio Sound, has formed a new company called Sound Reinforcement Services. Based in Athens, Ga., the company will be active in many aspects of the SR business, including manufacturing, rentals, installation, design and equipment brokerage.

The company's flagship product is its "Mirror System," a loudspeaker system (available in Europe for the last two years), which was used in the U.S. on Sinéad O'Connor's recent tour. Norton gives us a look into the "Mirror": "We offer a full range of enclosures. The Mirror System is the big one—a three-enclosure trapezoidal system with two LF bass horns and a mid/high horn-loaded box. Both [boxes] are identical in size and come standard with flying hardware. Then we have a smaller full-range box with two 15-inch, a 10-inch and a 2-inch driver, again trapezoidal.

"Finally we have a small 15-inch, 10-inch and 1-inch, which is for installations—churches, airports, anything that doesn't require a lot of low end. We've done a lot of work on the horn flares so they're very accurate," Norton continues. "Any horn-loaded design is going to have some coloration, but we've minimized it by making sure that the actual throats of the horns are as accurate as you're going to get out of the materials, which are a carbon fiber composite for the mids and highs and a multipiece wood-folded horn for the LF. We like to think it's the purest, loudest box of sound for your money."

A digital crossover/limiter

—CONTINUED ON PAGE 108

In keeping with this month's educational theme, I spoke with six sound reinforcement companies to ask what they look for in prospective entry-level employees. While they all had slightly different outlooks on the subject, the bottom line for nearly everyone was attitude (or lack thereof). In other words, don't apply if you're not a team player.

"One of the things I tell people when they come in," says Bruce Burns of Burns Audio, "is that there are two sides to the sound business. Fifty percent is knowing how to do proper sound, and 50% is getting along with the people you work with." This sentiment was echoed by Stephen Zelenka of Maryland Sound's West Coast touring division: "What we stress is attitude, willingness to learn, and [a desire] to be part of a team. On the road, you might know everything about audio, but if you've got no personality, you're going to have a *lot* of trouble surviving."

Opinions varied on how much prior experience was desirable. At one extreme was Mike Leach of Woodstock Sound and Lighting, a regional company based in Dallas. "Once someone already knows something, it's hard to retrain them to [do it] the right way, because they think they already know it. I've had people come to us from some of the local [audio] schools who thought they knew it, but they really didn't know too much, and they've been going to school for a while. By taking them on the job and going step by step, I think that's the better way." Most people preferred some prior experience, including basic electronics and/or physics, previous live sound work, and possibly some related college education.

Keith Holmlund of Swanson Sound Service Co., a regional company based in Oakland, Calif.,

pointed out that other skills are important, too. "We also look for someone with a mechanical background—when you get a product, it doesn't come packaged in the box and ready to go—the rack rail doesn't always come in on the right side, the casters don't always fit. You have to be good with your hands. That's a problem in this area, because high schools are cutting all their wood and metal shop programs." Last, but not least, several (only half-jokingly) mentioned a good driving record and willingness to drive a truck as a plus.

Many were concerned that recording-oriented trade schools might not provide graduates with strong skills for sound reinforcement work. "The discipline, etiquette and work ethic required in our business is such a hands-on learning process that it's difficult to develop a program for it," says Mark Friedman of See Factor (Long Island City, N.Y.). Rick Baynard of Total Concert Productions (St. Petersburg, Fla.) agrees. They've hired graduates from audio schools, but first put them through an additional 250-hour internship to complete their live sound background.

"I find that putting them in with an engineer who's done a thousand shows gives them a lot more real world experience," Baynard notes, "and the most recent intern we hired seemed to enjoy that setting more, too."

Bruce Burns also expressed caution. "The resumes I get from people out of these recording schools are people that want to do recording, and we just don't do it. I say, 'This is not what you're looking for. We go out and load trucks and lift speakers.' It's a lot different environment from the recording studio."

Rocky Norton of newly formed Sound Reinforcement Services

—CONTINUED ON PAGE 176

—FROM PAGE 107, SOUNDCHECK

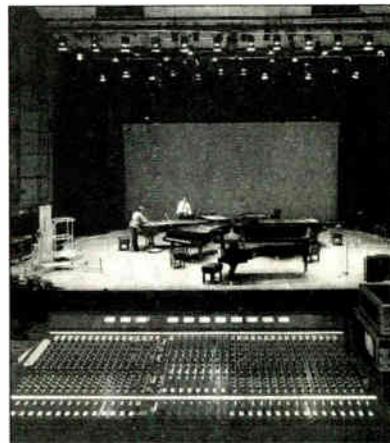
system controller is available, but not required, to get full performance from the enclosures. Gauss drivers are currently being used, and SRS is eagerly awaiting the release of Gauss' new 600-watt, 10-inch and 800-watt, 18-inch drivers. The company also has been exchanging driver design ideas with Korean-owned (and Kentucky-made) speaker manufacturer SAAT. After evaluating a number of power amps, SRS recommends QSC amps, and can supply prewired racks with QSC EX4000 and MX1500 amplifiers to complement the Mirror cabinets.

The company has one full arena system ready for the road now, and expects to have another online in time for the fall season. Norton is pleased with the response they've received so far, but doesn't want to rush a good thing. "We're in no rush to speed things up and then make mistakes," he says. "We want to make sure every show we do is remem-

bered by everyone for the efficiency of the crew and the sound quality."

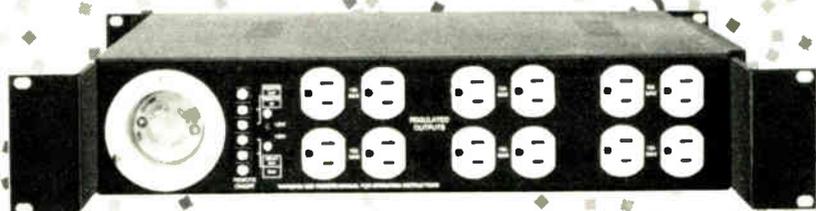
NEWS FLASHES

Quickbeam Systems (Albuquerque, NM) provided sound for a recent IBM industrial at the new Albuquerque Convention Center. Massive acoustical treatment was required to tame the room's acoustics, which were described as "horrendous." To prepare the room for Quickbeam's Apogee system, 80,000 square feet of carpet and 750 linear feet of soft goods were used, including two clusters of four 3x3 cabinets, flown with Mars Bars and ten AE5 cabinets for fill and additional low-end...Altec Lansing's Vari-Intense controlled-coverage horn systems were installed in a number of facilities, including the 10,500-seat Hofheinz Pavilion at the University of Houston, where they replaced other Altec equipment installed 25 years earlier.



Piano Circus and Soundtracs at the Queen Elizabeth Concert Hall.

According to Altec, the VI horn's asymmetrical shape provides uniform SPLs for both short- and long-throw coverage from a single driver...B.B. King opened a new blues club on historic Beale Street in Memphis. The sound system includes a 30-input TAC Bullet console, TAD-loaded custom mains designed by Murphy Odom & Assoc. (Memphis, TN), Klipsch



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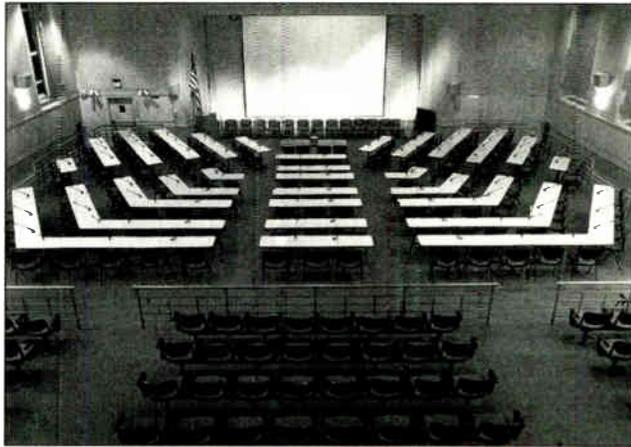
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More Audio-Technica mics than you can (or should) shake a stick at in the City University of New York's Law School Auditorium.

former's contracts and sponsorship agreements...**Monte Bros. Inc.** of New York City recently completed an installation at the City University of New York's Law School main auditorium. *Ninety* Audio-Technica AT859 condenser mics were installed around the rows of tables, which make up the conference area. To hold down ambient noise (and prevent unintentional on-mic gaffes by students), the mics are grouped and gated by Aphex 612s.

monitors and QSC power amps... Another musician-turned-club-owner is Prince, whose new club Glam Slam (Minneapolis, MN) recently installed Electro-Voice DeltaMax and MT-4 gear... What would you use to mix six pianos at once? The answer for RMPA of Worcester, England, was a Soundtracs SPA console, which they used at a recent performance of "Piano Circus" at the Queen Elizabeth Concert Hall. Headroom and signal-to-noise ratio was an obvious requirement for the extreme dynamic range of the group's music. The system was rounded out with an Opus Sound AT 2000 System and Beyer M740 mics... Sound Services (Little Rock, AR) completed its busiest winter ever, which included the National Association for Campus Activities Convention Showcase at the Opryland Hotel in Nashville. That event included two stages, on which over 100 acts performed during the five-day event. The company has expanded its equipment inventory with a 12-cabinet EV MT-4 system powered by Crown MT2400 amps. Upcoming purchases will include TC Electronic 1128 EQs, and a Ramsa WR-S840F and Soundcraft 500M consoles. Larger sound companies used Sound Services for console rental last year, and the company hopes to increase that portion of its business this year... Sequoia Creative Inc. (Sun Valley, CA) will be producing the July 4th celebration on the Mall in Washington, DC. In addition to stage and sound facilities, the company will be solely responsible for all film and recording rights, per-

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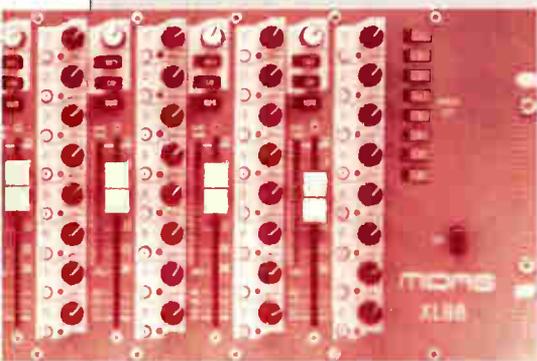


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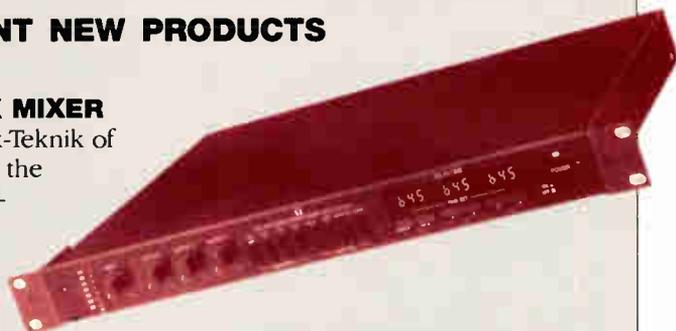
SOUND REINFORCEMENT NEW PRODUCTS



◀ MIDAS MATRIX MIXER

Distributed by Klark-Teknik of Farmingdale, N.Y., is the Midas XL88, a stand-alone 8-channel matrix mixer in a 4-unit rack chassis. Each channel includes a 20-segment LED output meter, direct output (for combining multiple XL88s), Penny & Giles fader, PFL, LED status indicator, channel muting and balanced XLR connections. Transformer balancing is optional.

Circle #291 on Reader Service Card



TOA D-1103 DELAY ▶

The Engineered Sound Group at TOA Electronics (South San Francisco) offers the D-1103 (\$1,398), a 1-in/3-out digital delay designed for use with portable and installed sound systems. Delay times range from 10 microseconds (1/8-inch) to 655 milliseconds (approximately 730 feet), and all delay changes can be made in 10µs increments. The unit incorporates 16-bit, 100kHz A/D converters, and four non-volatile memory locations store delay information. Inputs and outputs are electronically balanced, using terminal strip connectors; optional I/O transformers are available.

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BAG END TA-15 ▼

Marking the company's first entry into the 15-inch, two-way loud-speaker market is the TA-15 from Bag End Loudspeakers of Barrington, Ill. The TA-15 combines a 15-inch E-15 woofer, E-500 titanium-diaphragm compression driver with constant directivity horn, and Time Aligned™ crossover into a compact (27x22x15-inch), lightweight (74-pound) ported cabinet. Specs include a rated frequency response of 50-19k Hz (±3dB), 103dB sensitivity (1W/1m), and a continuous sine wave power handling of 200 watts (800W instantaneous peak). The TA-15 is priced at \$896 in black carpet or oiled birch finishes; a carpeted floor monitor version is also available.

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SHURE ANTENNA ▼ DISTRIBUTION SYSTEM

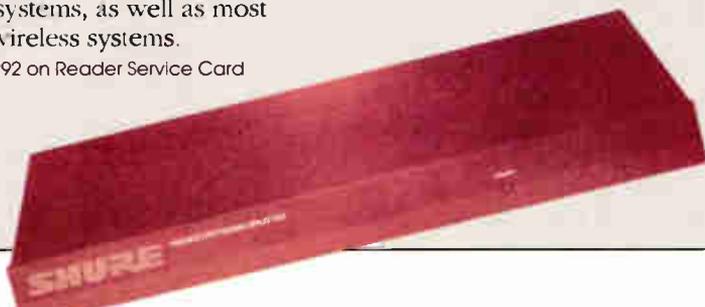
New from Shure Brothers (Evanston, Ill.) is the WA-400, a 2-in/8-out amplified antenna distribution system that allows using two antennas with as many as four diversity or eight non-diversity wireless systems, thus reducing the clutter and interference associated with multiple antenna systems. Priced at \$583.50, including connecting cables, the WA-400 is housed in a single-rackspace box and is said to operate with all Shure systems, as well as most other wireless systems.

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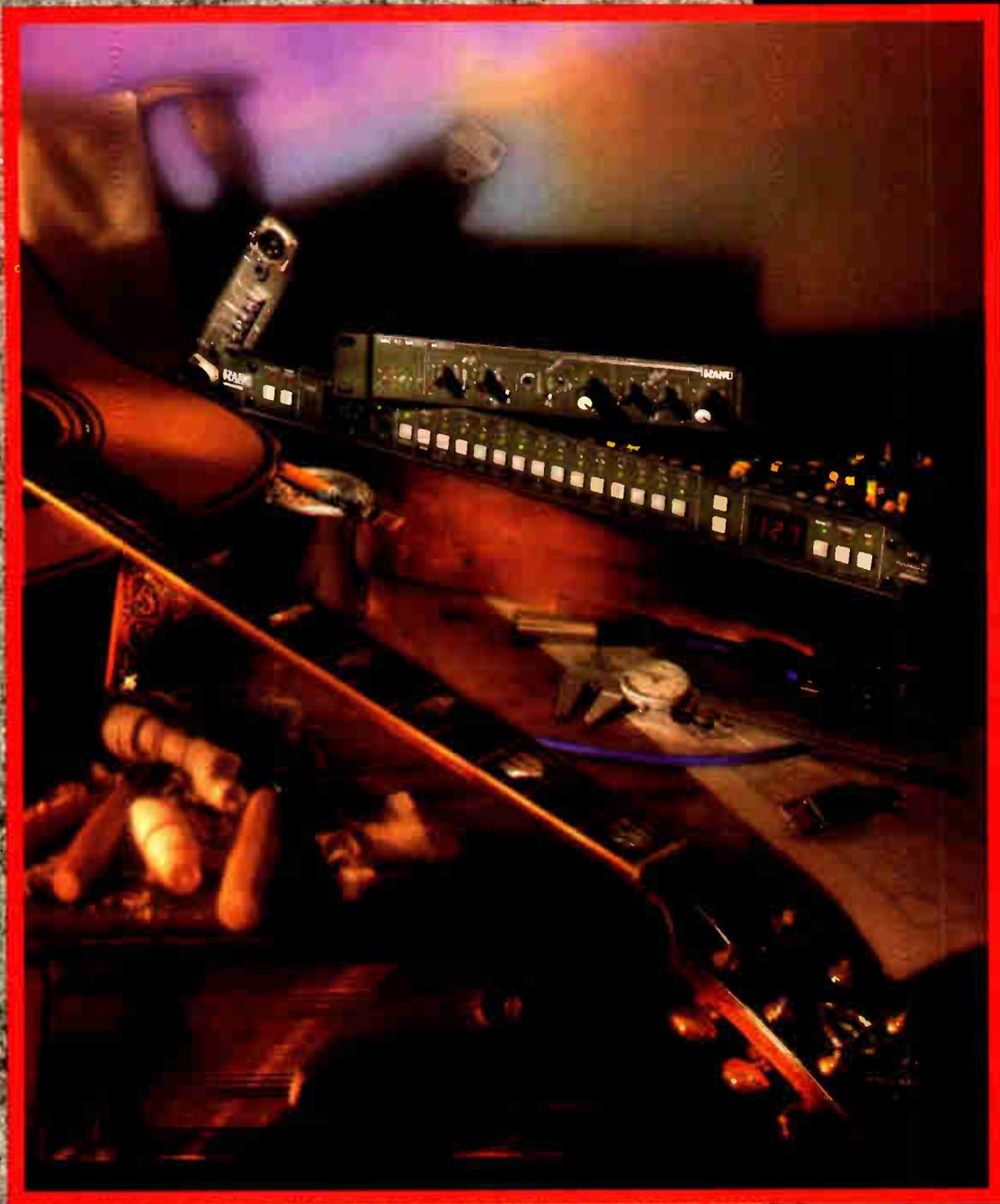
◀ COMMUNITY CSX57

Now available from Community Light & Sound (Chester, Pa.) is the CSX57, a three-way speaker system with a power capacity of 300 watts RMS (750 watts program), 40-18k Hz frequency response and a maximum SPL of 128 dB. Bass frequencies are handled by dual 15-inch ferro-fluid cooled woofers, while horn-loaded MF (1-inch titanium-diaphragm compression driver) and HF (PZT driver) sections reproduce the high end. The CSX57 weighs 110 pounds, measures 33.5x26.75x18-inches and is priced at \$695.

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by Robin Tolleson
all photos by Jay Blakesberg

TODD RUNDGREN

IS IT LIVE OR IS IT...? INSIDE THE SECOND WIND RECORDING SESSIONS

Considering Todd Rundgren's career up to this point, it's difficult to be surprised by anything he does. After all, this is the man responsible for such diverse projects as *Something/Anything*, *Adventures in Utopia* and *Acapella*; the producing behind Grand Funk Railroad, Meatloaf, XTC and The Pursuit of Happiness; the composing behind soundtracks for *Pee Wee's Playhouse* and *Crime Story*. And we haven't even scratched the surface yet.

On *Second Wind*, Rundgren brings the recording studio to the stage, combining soul-stirring Marvin Gaye impressions with wide-open rockers and some selections he wrote for the off-Broadway play *Up Against It*. He's not only showing off his "human" side

—CONTINUED ON PAGE 114



Photos: Todd Rundgren on the set, the backup singers and Roger Powell on keyboards.

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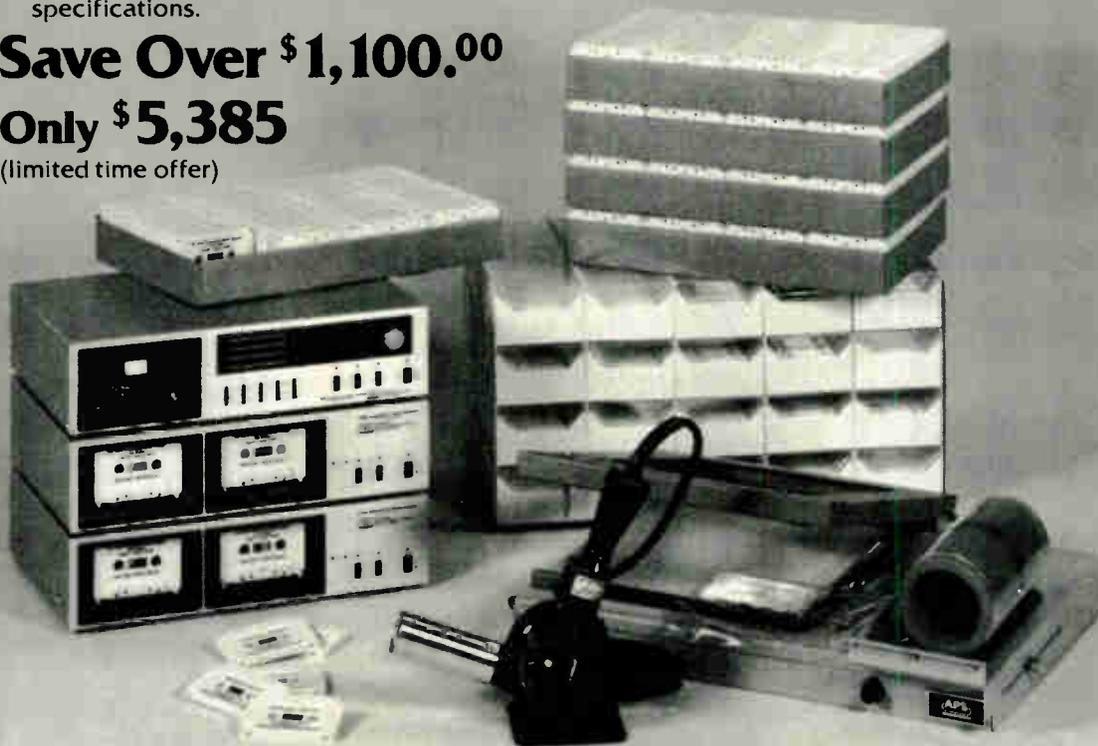
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on *Second Wind*, recording in front of 2,000 fans, but proves he can adapt to a good capitalist idea, too. Tickets to his "recording sessions" cost \$18 each.

On his previous album, *Nearly Human*, Rundgren actually taught his band the material in the studio and they performed it live there without an audience. Before *Second Wind*, Rundgren made demos and rehearsed the band for two weeks, then performed the material on a week-long tour of California before settling in at the Palace of Fine Arts in San Fran-

cisco. There, over five nights, the album was recorded. "It was like a weird dream with all these people watching," says guitarist Lyle Workman. "Because to me it was a session."

"Todd got pretty accurate with his drum machine parts on the demos," says hard-hitting drummer Prairie Prince, "and asked us to stay within those boundaries as much as possible." Former Journey member Ross Valery pumped bass. Ex-Tubes, and now Grateful Dead keyboardist, Vince Welnick joined Utopia keyboardist Roger Powell, and guitarist Workman gave the music a strong jolt. Horn men

were Bobby Strickland and Max Haskett, and the percussionist was Scott Matthews. Rounding out the ensemble were "the world's most dangerous backup singers": Michele Gray, Shandi Sinnamon and Jenni Muldaur.

Everyone onstage was separated by Plexiglas, and headphones were used instead of monitors. House engineer Michael Benedetti countered one critic's claim that the sound was geared toward the *real* audience, which was out in the mobile recording truck. "In a sense, that was true, but I don't think the audience ever suffered," he says. "They just didn't get quite as much as they would've had there not been a truck out back. I obviously can't pump it as loud as I would like to and be as dynamic with the mix as I'd like to, because of how it's going to affect the ultimate outcome of why we're all here, and that's to make a record."

Second Wind isn't a typical live album, in that crowd noise is kept to an absolute minimum. To that end, Rundgren explained to his audience each night that they mustn't make noise during songs, yell "Free Bird," or even applaud at a song's conclusion until given the all-clear (peace) sign. Rundgren's goal was to capture that "performance adrenalin" on tape and yet keep it as clean as possible, much as Joe Jackson did on his *Big World* album in 1986.

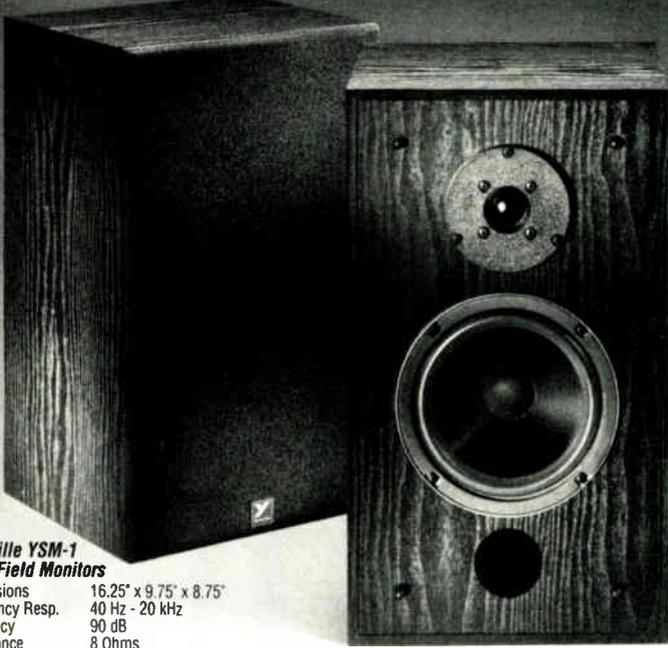
Rundgren: *Nearly Human* was recorded live in the studio. Over an eight- or ten-hour session, everyone would learn and perform the songs. The only problem was that by the time we started getting real takes, I had been singing for five hours or so. I would usually peak before the musicians would, then things would get slightly problematical. But the live performance from which we took *Second Wind* was two hours from top to bottom, so I wasn't blowing my voice out. We played the material on the road for two weeks before recording so everyone was more comfortable with it, although it was still new and challenging enough that everyone added a little bit of spontaneity to the performance.

Mix: Looking back at those two albums, what are the pluses and minuses of doing them like you did?

Rundgren: There was far less doctoring to do on *Second Wind*. On *Nearly Human*, we'd get the nugget of a take and cut pieces in from other takes to

—CONTINUED ON PAGE 166

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by Philip De Lancie

PAPER OR PLASTIC?

BATTLE BREWS OVER CD PACKAGING

As consumer sensitivity toward the environment grows, the music industry has come under increasing pressure

tribution to the problem, the music industry seems to get more than its fair share of attention on the packaging waste issue. According to *Billboard*, bills have been introduced in both the California and New York state legisla-

and distribution Robert Simonds began publicly advocating a switch away from the longbox, the notion was dismissed by music business powers-that-be. Now the industry has changed its tune. As stated in an RIAA press release from March of this year, "There is unanimity among member companies that the disposable longbox is dead."



Three views of the Eco-Pak.

to find less wasteful ways of packaging CDs. In most other countries, discs are sold in cellophane-wrapped jewel boxes. But in the U.S., longboxes and blister packs—inevitably thrown away as soon as the consumer opens the package—have yet to be abandoned.

The waste created by close to 300 million discarded packages a year is clearly senseless at a time when both forested wilderness and suitable landfill space are declining. But in a nation where wasteful consumption is a way of life, CD packaging is hardly the most outrageous environmental crime. It's doubtful that more than a handful actually get recycled, but the longboxes are recyclable. And they can also be made from recycled paperboard, as RCA recently announced its intention of doing. Furthermore, according to *BusinessWeek*, the boxes, measured by weight, make up just six hundred-thousandths of 1% [0.00006] of annual U.S. garbage production.

Still, despite its minuscule con-

tures to "ban disposable CD or cassette packaging that is more than one inch longer or wider than the actual disc or cassette." And though the labels decry government intervention, they actually have considerable incentive to go along.

Current costs for each longbox reportedly average about 35 cents, on top of 25 cents for the jewel box and 17 cents for the booklet. By dropping the longbox in favor of a shrinkwrapped jewel box, record companies could collectively save about \$100 million a year. Plus, some major artists, like Sting and Peter Gabriel, have become increasingly vocal about the environmental stupidity of the longbox. In an industry as image-conscious as the music business, that's an embarrassing situation.

Two-and-a-half years ago, when people like Rykodisc's VP of sales

But the question remains as to what will replace it.

Though Simonds' Ban the Box Coalition takes no official position on replacement packaging, his own comments make clear that a shrinkwrapped jewel box would be his first choice. But the retailing community has other ideas. As defined by the National Association of Recording Merchandisers, retailers' needs in packaging include

compatibility with existing fixtures (those left over from LPs), theft deterrence (hard to hide or cut open in the store) and "merchandising capability" (lots of space for eye-catching graphics). Since the

—CONTINUED ON PAGE 119

Tape & Disc News

Just When You Thought It Was Safe...

Remember Copy-Code, the CBS-developed system that the RIAA put forth as a means of thwarting home taping? The system relied on an upper midrange notch in program to alert copying decks to "protected" music. Many in the industry breathed a sigh of relief when the idea was dropped after a congressionally ordered study of its efficacy (or lack thereof). Subsequent discussions on anti-copying technology have tended to focus on digital transfers, like those restricted by the Serial Copy Management System, that can be controlled without tampering with the audio program. But RIAA hopes of restricting copying in the analog domain have apparently never died.

According to a story in *Billboard*, the RIAA has sought and received anti-trust clearance from the Justice Department to "enter into a research and development joint venture" with Bolt, Berenek and Newman Systems, of Cambridge, Mass. The agreement is for development of a system to control unauthorized copying—digital or analog—in "new technology digital recorders."

When contacted by *Mix*, RIAA VP Hilary Rosen offered little comment on the story beyond confirming the existence of the agreement: "This is really a private development on behalf of (RIAA) member companies, which is not ready for public discussion at this point." Given the industry response last time, it's not surprising that the RIAA would want to wait to come up with a system that's beyond reproach before talking much about it. But even if the designers achieve wonders from a technical standpoint, the most important element in any such plan is beyond their control: the incorporation of the technology into consumer machines. If the past is any guide, the reaction of hardware makers and legislators is likely to be far from enthusiastic.

Personics Pulls Retail Plug

Personics, the custom cassette system developed for in-store duplication, has abandoned efforts to operate in retail outlets. The company, which filed for Chapter 11 bankruptcy protection at the end of last year, is in the process of removing its 240 machines from the field. President and CEO Steve Boone, reached at Personics' headquarters in Redwood City, Calif., said the company could no longer afford to subsidize its retail operations with its profitable activities. And given the unwillingness of labels to allow current hit product onto the system, the prospects for making the in-store operations self-supporting were apparently dim.

Personics will continue to pursue some alternate applications for its technology. One promising area, according to Boone, is the corporate premium business, in which companies include coupons with their goods that entitle consumers to send in for a custom cassette. Another is a mail-order operation, which Boone says has attracted the interest of "major third parties" who do not feel it would take away from retail sales. A third possibility is licensing the system to local operators in foreign markets. Meanwhile, the company is in negotiations to pay its creditors (primarily publishing companies to whom it owes royalties) and hopes to emerge from bankruptcy by the beginning of July.

PolyGram Passes on Philips Plant

Last fall, Philips and Du Pont decided to split up PDO, their optical disc manufacturing joint venture. It was widely assumed at the time that the CD-Audio part of the company's North Carolina plant, which went to Philips, would be sold to PolyGram. Philips owns an 80% interest in the record company.

But Philips apparently needs money more than it needs to keep the replication facilities within the family. According to Roger Gouldstone, president of Hauppauge, NY-based Hauppauge Record Manufacturing, "There is a letter of intent existing between Philips and HRM describing our plan to acquire their

CD manufacturing business. We've agreed to negotiate a definitive purchase agreement, but many of the terms and conditions are still to be worked out. We expect the transaction to be completed within the next few months."

Gouldstone anticipates that the company will continue to make discs for PolyGram. But he says it's too early to tell if the operation, once acquired, would stay in its present location. The plant is currently shared with PDO's manufacturing capacity for professional products like CD-ROMs and WORM discs. That part of the business is on the market separately.

SPLICES

Otari Corp. plans to consolidate sales and marketing for the Americas of Otari and King loading and duplicating gear. The operations will be centralized in Otari's U.S. headquarters in Foster City, CA. The company has also announced the availability of two **Optical Media International** CD premastering and recording products as options for the DDR-10 digital disk recorder/editor. Otari also upgraded its Mirror Master Recorder for TMD video duplication with the addition of luminance and chrominance inputs and improved electronics. **Electro Sound** (Sun Valley, CA) reports the sale of duplication gear for expansion or upgrading at several major facilities, including National Tape, Allied Records, Music Annex and MCA Manufacturing. **Maxell** is making a bid for CD master tape business with the introduction of KCA-30 and KCA-60 3/4-inch U-matic digital audio tape. The company is also now offering its R-120DM DAT tape in a bulk duplicator format. **Amplex Recording Media** announced the commencement of production on a new coating line at its Opelika, AL, tape manufacturing plant. The line will allow expansion of capacity for metal particle tapes. **TDK** announced the contribution of an unspecified number of DATs and cassettes to the Boston Symphony Orchestra. The donation will allow the orchestra to archive fragile recordings of performances broadcast in the early 1960s. ■

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—FROM PAGE 116, PAPER OR PLASTIC?

packaging issue surfaced, these requirements have been put forth by NARM in support of the long-box. But last year the group asked its packaging committee to look into possible alternatives that could meet their needs. The result was a statement asking suppliers to move away from 6 x 12 inches as the standard package size—to 5 x 11 inches.

That less-than-earth-shattering recommendation indicated that the only way to get a less wasteful package past the retailers was to design something that is oversized in the stores, but collapses to jewel box size after purchase. Several attempts have been made in this direction. AGI's Digitrak is a paperboard package (except for the plastic CD tray) that was used for some copies of Sting's latest album. It's held open at retail with two long plastic tracks. When the tracks are removed by the buyer, the package folds to jewel box size.

Sony has also tested a package with long tracks, using them to hold a jewel box in its open position. But both the Sony and the Digitrak solutions leave the consumer with tracks that, while recyclable, are most likely to be thrown away. With that problem in mind, a major entertainment packaging company owned by Time-Warner, Ivy Hill, came up with the Eco-Pak. It's a paperboard/plastic hybrid in which only the shrinkwrap is disposable. The package measures 5 x 11.5 inches when sold, and is held open by the plastic CD tray. It gets down to jewel box size through a combination of sliding the tray and folding the front and back paperboard panels.

Just three weeks after the Eco-Pak was developed, WEA president Henry Droz took many in the industry by surprise by announcing that it would be in use by the Warner Music Group labels by April of 1992. Given Warner's nearly 40% share of the U.S. prerecorded music market, and the warm reception that the Eco-Pak has received from retailers, the package has emerged as a front-runner in the quest for a longbox replacement.

But enthusiasm for the Eco-Pak

is far from unanimous. Simonds says that the package "technically answers Ban the Box's concerns about disposable elements, and we take some satisfaction in that. But we didn't anticipate that the industry would choose such an ass-backwards way to do it."

One of Simonds' concerns is the cost of the proposed package. "All we've seen are quotes for runs of 25,000 units. That price [41 cents each] is already more than a jewel box with artwork. And there's no quoting going on for smaller runs, which both small and major labels do for the bulk of their titles. If it follows the same sliding scale as all other printing in the world, the price for 5,000 pieces could be nearly a dollar. So we're obviously not in a range where we're going to be able to lower CD prices."

Another problem is the duration and cost of the changeover, which Simonds estimates at "a minimum of \$20 million to change all the manufacturing equipment." This point is echoed within the automated packaging community itself. One inside source, who requested anonymity for fear of being shut out of changeover business, says the Eco-Pak will require a major automation commitment because of all the folding and gluing. Current machines may have to be scrapped, because "hard automation" designed for one specific set of tasks is unlikely to be salvageable or adaptable to a different application. "It represents a big opportunity in terms of selling machines," he says.

In addition, the source believes the package's design is flawed from a production standpoint. "Warner made two critical mistakes. They use two different plastics in one part, which drives manufacturing costs way up. And they're going to have to print the cardboard in large runs to get economies of scale. That means stockpiling all these big pieces of printed cardboard in warehouses with humidity and heat and cold."

Perhaps most troubling are the questions he raises about the eco-friendliness of the design. "We're talking about a lot of paper," he says. "And even if they call it recycled paperboard, it could mean they just put in some trimmings from the

factory, maybe only ten percent." Regarding the plastic jewel box, however, he points out that "plastic is a by-product of oil. And we have more oil by-products than we know what to do with." Better to use plastic, he argues, than to encourage the "constant deforestation that will have to take place to pump out these 'ecology-minded' Eco-Paks."

These points are sure to be among those raised by JAM (Jewel box Advocates and Manufacturers), an industry group currently running pro-jewel box ads in *Billboard*. Jewel box supporters are said to have encouragement from at least one major label, in addition to a well-known plastics supplier. Furthermore, alternative jewel box designs meeting retailer concerns are reportedly under consideration. But it may prove difficult to stop the momentum Warner has created.

To gauge industry commitment to the Eco-Pak, and explore the "paper or plastic" question, *Mix* interviewed Robert Simonds and three others involved in the debate. Lou Dennis is a VP of marketing with Warner Bros. in Burbank, California. Tom McGuinness holds a similar position with Sony Music in New York, and was involved in the test marketing of that company's alternative package. Lou Fogelman is president and CEO of Show Industries, which operates the Music Plus record chain, and serves as head of the NARM packaging committee.

How would you compare the pros and cons of the Eco-Pak to its jewel box-only packaging?

Lou Dennis: We obviously think that the Eco-Pak is going to address the ecological situation, because all you do when you buy it is throw away the cellophane. And it also resolves the fixturing problem. So those are the pros. Are there any cons? I can't say because it hasn't been out in the market yet. But I can tell you that when we announced it at NARM, the dealers applauded. Dealers in the U.S. don't want the jewel box only.

Lou Fogelman: The Eco-Pak addresses all the issues that both the retail and manufacturing communities were concerned about. The labels were concerned about cost and the environment. Retailers were

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concerned about security, fix-
turization, merchandisability and
the environment. The jewel box
doesn't address all those issues.

Tom McGuinness: The Eco-Pak
provides more theft deterrence, and
it can be displayed in existing fix-
tures. When you take it home, you
throw nothing away—you keep the
whole thing. It's probably a little
more costly than the jewel box, but
it has more room for graphics, with
four panels showing instead of two.
So the Eco-Pak has advantages,
though there are some people out
there who feel that the jewel box is
a richer looking package.

Robert Simonds: The only thing
that most people don't like about
the jewel box is that they are too
brittle, and they break. The Eco-Pak
affords a larger graphic area for
merchandising purposes, but I've
never considered that to be impor-
tant. The real advantages it has over
the jewel box is that it solves the re-
tailers' fixturing dilemma, and it's
considered to be more secure from
theft because it's larger. The other
big advantage to the record busi-
ness is that the packaging compa-
nies can make money with paper-
board packaging, which they don't
make from jewel boxes. The compa-
nies that make jewel boxes aren't
owned by or affiliated over the
long-term with the record compa-
nies. They'll still have the Norelco
box business [for cassettes], but
they're just not as much a part of
the industry as the paperboard folks.

The downside of the Eco-Pak is
that you'll have this 5 x 11-inch ver-
tical graphic in the store, but when
it folds up to go on your shelf at
home, it's sideways. It also requires
all manufacturers to retool for in-
sertion of CDs, which is very ex-
pensive and requires a long time.

*Do you think that consumers are
likely to have any trouble with a
switch away from the jewel box?*

Dennis: We don't have any data on
that, but we don't think there will be
a problem.

Fogelman: I don't think there is
any data yet, so everything is pure
speculation. I've heard pros and
cons on both sides, but I think that
basically the consumer buys the
music. The package is an important

but secondary item. As long as it
fits in existing carrying and storage
cases, I don't think the consumer
will have a problem with it.

Personally, I'm not a big fan of
the jewel box. I find them some-
what cumbersome, and they break
easily. But if the customer still
wants a jewel box, they could buy
it separately.

McGuinness: Any time you have a
change, you have a certain period
of adjustment.

Simonds: I think there is going to
be a significant consumer reaction
against moving away from the
jewel box. The record companies
have a tendency to underestimate
the attachment that consumers
have to it. The few experiments
that they've done with cardboard
packaging in the past have been
disasters because of consumer re-
jection. So they have to address
the question of whether the Eco-
Pak is something that consumers
will be happy with. It hasn't been
tested at all. That can be done with
focus groups and product testing.
But there are no plans for that—
Warner has just announced they're
going with this package.

*Children's singer/songwriter Raffi
wrote a commentary in Billboard
not long ago in which he outlined
a plan for switching to jewel box-
only packaging. The record com-
panies would eliminate the long-
box. Their cost savings—about 40
cents per disc—would be split with
retailers, who would agree to use
the money to refixture their stores
for the smaller package, which
would enable them to stock and
display more product. Is this a via-
ble plan?*

Dennis: The feeling at our group
is that the retailers don't like that
plan, because they don't want to
refixture their stores.

Fogelman: There's no way that 20
cents per disc for six months
would come close to covering re-
fixturing costs. Plus, I don't
think the plan shows an under-
standing of the disruption that the
construction would cause. As far
as doubling disc space, I don't
think that's necessarily true. It
depends on what kind of fixtures
you go to. You also gain space with
the Eco-Pak, because it's thinner



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than the longbox, so you're able to get more CDs in your existing fixtures.

McGuiness: I don't think anyone ever would have bought that plan. That would have cost record companies a fortune. He said to use money that was being saved by eliminating the longbox, but it's still asking the record companies to spend money.

Simonds: Raffi's plan was actually very similar to one that I outlined in *Billboard* in April of 1989. It has never been a live option. The retail community was never interested in discussing how to make jewel box merchandising work. Now that there's the Eco-Pak, they certainly are not interested in jewel boxes.

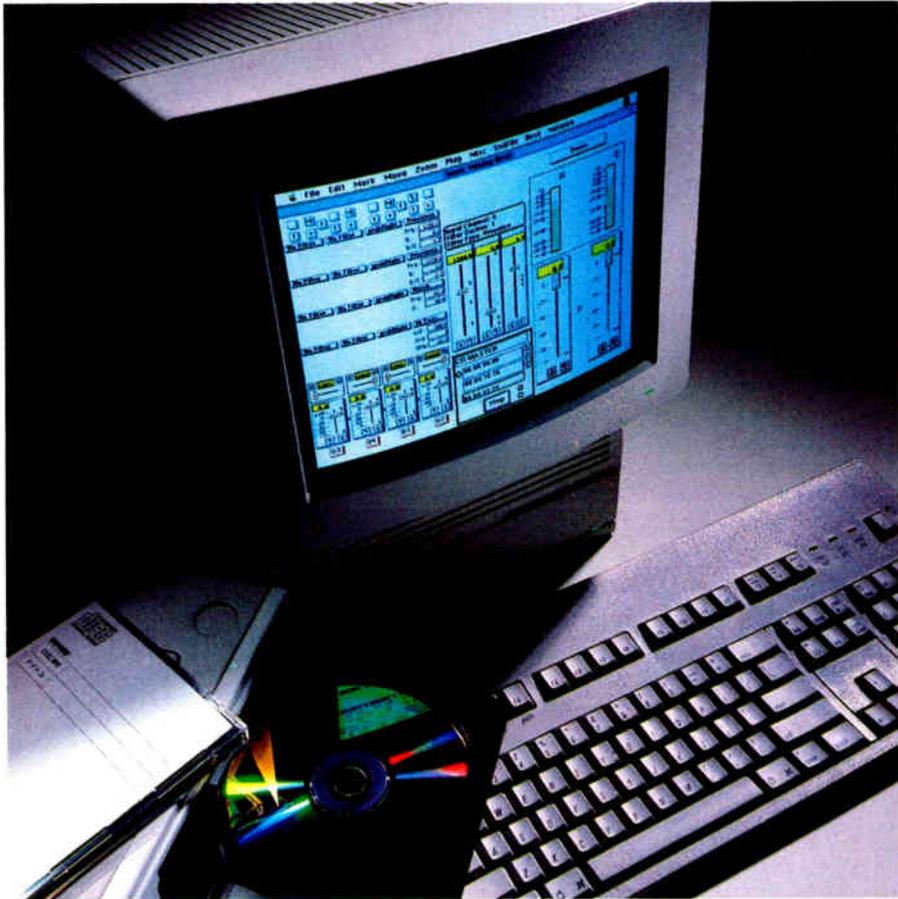
What about the alternatives to the Eco-Pak, such as the Digitrak and the opened jewel box package tested recently by Sony? Are they now essentially dead?

Dennis: Some people may chose to go with Digitrak, and there are other packages being developed. The Eco-Pak may not be the only option, as long as the others fit the store bins. But the Warner Label Group has announced what we're going to do. We've embraced the Eco-Pak.

Fogelman: I don't think the other alternatives are dead. I think all three packages answer all the issues for the industry. The Digitrak and the Sony package are a little less desirable because they don't answer the environmental issue 100%. But given a little more time, the tracks that hold the packages open could be recycled. So I think it would be possible to have all three packages out there.

McGuiness: I think you can forget about the package we were testing. It's still there as a possibility, but I believe the Eco-Pak would be the best alternative at this time.

Simonds: The Digitrak didn't really go over well for Sting. The package doesn't work that well. It doesn't stay closed and the folds are awkward. I'm not privy to PolyGram's research, but appar-



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ently they found the consumer response less than positive.

As for the Sony thing, the testing they did was a disaster, because it didn't hold up in stores. The packages got too beat up, and the jewel boxes would break.

Has there been any feeling in the industry that Warner, by announcing a decision rather than floating an idea, has in effect imposed a package on the rest of the industry?

Dennis: I can't speak for the industry, but I don't think so. We had some options and we chose the Eco-Pak. Why would there be any pressure on anybody else to do what we're doing? When the 6 x 12 was adopted several years ago, we chose to go with cardboard, and some people chose to do blister packs. And that continued for a while.

Fogelman: I think Warner was saying: "We've found the solution, it answers all the needs, and everybody that we've shown it to likes it. Why do we need to wait any further?"

McGuinness: They're free to make a decision if they want to, and that in no way obligates anybody else to go that way. Of course, none of us wants different packages out in the marketplace, but the only thing you have to worry about is that all the packages, regardless of how they are made, have the same outside dimensions.

Simonds: There's definitely a feeling that they are trying to shove the Eco-Pak down people's throats, especially considering that Ivy Hill is a wholly owned subsidiary of Warner. It's felt that Warner is supportive of the Eco-Pak because it uses paperboard. So it's a profit center for Ivy Hill compared to using jewel box packaging with no cardboard at all. Ivy Hill was considered by many analysts to be in serious trouble if jewel box merchandising was adopted.

If the Eco-Pak is settled on for the U.S. market, our packaging would continue to be different from that used in the rest of the world. Is that in any way a problem?

Dennis: In Europe and some other places they put out CDs in jewel

boxes. But they sell records differently from the way we do in this country. There, you have to go to the counter to pick up your disc. In the U.S., you're dealing more with self-service.

Maybe they'll decide to use the Eco-Pak in Europe. Just fold it down and shrinkwrap it, instead of keeping it long. But those are their choices to make.

Fogelman: Maybe the rest of the world is out of sync and the U.S. is right. There are a lot of things that are different here. If you talk to Russ Bach at CEMA (Capitol's distribution company), he'll say it matters because of this issue of moving merchandise around the globe. But I'm not sure how much of that is really done.

McGuinness: Here in this country, we don't feel that it would be a problem, though I don't know what Sony in Japan feels. But I think one of the other record manufacturers feels that if there is a world market, things should be available in all markets in the same package.

Simonds: From the record company standpoint, it means having a different configuration in the U.S. That means you have to have a different set of art work and films for release in any other country, which adds to production costs. It also makes it very difficult for U.S. companies to export their goods. It's a typical American attitude that we're a big enough market, in theory, that we can have a package that nobody else can use. But many record companies, ours included, see a growing part of business to be sales outside the U.S. So different packaging is an obstacle to exporting, especially for smaller companies.

What steps remain now in the process of arriving at a permanent resolution of this issue, and how soon do you expect to see the average CD going out to stores in new packaging?

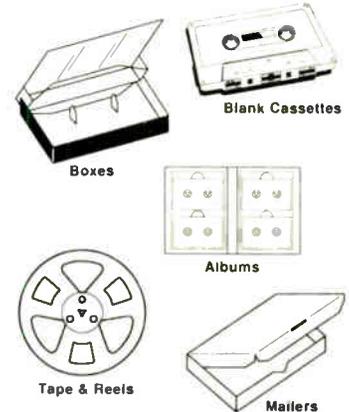
Dennis: Once again, each company comes to its own decision on how it wants to package its goods. It's against antitrust law for any trade group to decide what our pricing or packaging should be.

As far as our own plans, you won't begin to see Eco-Paks until

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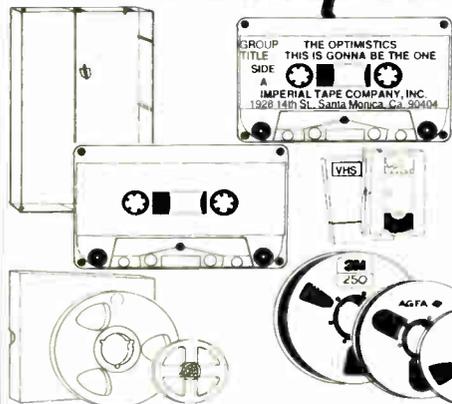
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April of 1992. This is still being worked out, but we'll probably start with new releases, and then convert the catalog. You can't just push a button and have your entire catalog appear in Eco-Pak. You have to make a lot of conversions at the plants, and there's a lot of work to be done.

Fogelman: I think the transition is going to take awhile. You've got to gear up the tooling, and once that happens, maybe within a year, they could start shipping it on all new product. But you've still got an awful lot of merchandise out there. You're not going to discard all of your existing longboxes. That would be wasteful and costly. So, to see a 100% change, it's going to be something like three years.

McGuinness: The industry-wide decision that's necessary is that everybody agrees on the outside dimensions. Beyond that, each company will make its own decision. Warner has announced theirs, but it will be at least a year by the time they get tooled up for it. As for Sony, there is no one person in the company who would make that decision alone. You have to get a bunch of people to sit down and agree that this is the way we are going to go. At this point, it's still being debated.

Simonds: The only hope for anything happening soon is if the Eco-Pak falls flat on its face and everybody just decides to go with the jewel box. That would only take about six months. Any other package is going to take up to two years to implement.

As far as the process, there won't be any official selection of a sanctioned package for everybody to use. But there are ways for the industry to come to a consensus about packaging. That process continues. Inevitably, there will have to be some product testing and research done to find out what will fly. The Eco-Pak has certainly not yet been adopted as the new standard. ■

Tape & Disc editor Phil De Lancie is a mastering engineer at Fantasy Studios in Berkeley, Calif.

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TRAINING STUDENTS IN AUDIO-FOR-VIDEO

Audio post, once a back-burner subject, is at the top of the curriculum at many schools that offer courses in audio, video, radio and television. Here's a random roundup of the offerings at eight institutions around the country.

The Art Institute of Pittsburgh is offering a new program called Music and Video Business. According to academic department director Connie Moore, it's an "eight-quarter program that trains students in both audio and video production, as well as in business communications for audio, business, radio and TV."

Post-production "definitely forms an important part of the curriculum," Moore adds. "We try to explain to students all aspects of the recording industry and emphasize the relationship between recording and video." In the

classes, students work in a TV production studio equipped with 3/4-inch editing. They are required to study audio recording, radio operations, video editing and post.

The school owns all the equipment used by the students, and facilities include a 24-track studio equipped with an Otari MX-80 recorder and Sound Workshop console. Most of the students, Moore acknowledges, are interested in becoming audio engineers and come to the program with only a minimal understanding of recording.

Many students in the Music and Video Business program are older, having graduated from high school some years ago. Some are interested in a career switch; most have been working in another aspect of the business, such as touring with a band.

"Students consider it a glamorous business," Moore says. "We don't discourage that, but we try to present all views and let them make up their own minds. They're always surprised to find out how much work it is. There's a maturing process. The students end up realizing that if a career in recording—or concert promotion or video post—is what they like and want and can make money at, they have to work hard to be good at it."

A new program emphasizing post is also available at the Institute of Audio Research in New York. According to Miriam Friedman, a director of IAR, the school now offers a six-month course called the Recording Engi-

**Institute of
Audio Research**



neering and Production Program. "One aim of the revision was to incorporate more audio-for-video and post-production into the main program," Friedman says.

The thrust of the school's post-production teaching involves intensive work with tape machine interface and synchronization. IAR students currently use an Adams-Smith Zeta-3 synchronizer controller to lock two tape transports, as well as a computer-based video sequencer. Other equipment includes a BTX synchronization system, Tascam BR-20 2-track tape machine with center-track time code, and Sony 3/4-inch video recorders. Everything is connected to an MCI 24-track recorder. IAR also has Macintosh computers equipped with a Sound Tools digital recording and editing system and a SMPTE/MIDI/Macintosh interface.

IAR has received assistance from Adams-Smith and anticipates a "further relationship" with the company. The school also has a cooperative agreement with SSL, and an SSL console recently delivered to Howard Schwartz Recording, the New York post house, was "tested and warmed up by our students," Friedman adds. Learning about time code is considered a priority at IAR. "We make sure the students have a firm understanding about SMPTE time code and know how to lock large audio-video systems together."

In addition to the recording, engineering and production curriculum, which is part of the basic course work of all diploma students, IAR offers a separate, advanced course on audio sweetening for film and video, with emphasis on video theory as well as sweetening techniques, mixing and layback. Students also visit post-production houses around New York, including Magno Sound and Sync Sound.

A different kind of student body can be found at Michigan State University's Department of Telecommunication in East Lansing. As a land grant college, the school receives about 75% of its student body from the state of Michigan.

According to Gary Reid, audio specialist on the school's faculty as well as general manager of WDBM-FM, the school's 2,000-watt student radio station, the make-up of the audio students is affected by their status as part of the University's large Department of Tele-

communication. "The result is that the students we get and the focus of the program are different from what you'll find at the more traditional music/recording/engineering programs," he says. "The Telecommunication department here deals with broadcast media, cable, telephony, satellite communications and other areas. Fourteen faculty members share a variety of backgrounds, including audio, video and computers. With that focus, students coming through here tend to

associated editing rooms.

Students who have taken the advanced audio course have gone on to various high-end careers. One graduate was hired by CBS in New York as a mastering engineer. Another is mixing films in Los Angeles. Others work at various record labels in such capacities as production coordinators, and still others are staging live concerts or working at post-production houses.

Audio-for-video and audio post, says Reid, are "increasingly important to our students. In the intermediate and advanced courses, we go heavily into



Full Sail Center for the Recording Arts

have a wider background than students enrolled in a recording program at a music school."

Within the department's audio sequence, there are three formalized courses (basic, intermediate and advanced). Associated with the audio coursework are WKAR-AM, WKAR-FM, and WKAR-TV, which are not student stations but professional educational broadcast organizations with ties to the campus. There is also collaboration with the large on-campus instructional TV system, which is run out of Michigan State's Telecommunication department building. WKAR-TV has three studios of its own to supplement the other three in the department. WKAR Radio also has a set of studios ranging from 2- to 24-track, six of which are part of the department, plus

it. The 24-track room is well-equipped for video sweetening. And since the department also runs two TV studios, the audio people work with the video people: One group shoots the video, and my kids do the audio on 24-track."

Few audio programs can boast a better location than the one offered by the Recording Industry Management department in the College of Mass Communications at Middle Tennessee State University. The university, in Murfreesboro, Tenn., is 30 minutes down the freeway from Nashville.

"We have a strong audio-for-video and post-production orientation here," says chairman Christian Haseleu, "partly because the Recording Industry Management department is closely associated with the university's Radio and Television department. There's a

lot of crossing back and forth.”

In September, the department will move into a new Mass Communications building, which includes a control room and lab listening area with Dolby Surround Sound. “We’ll be teaching not just stereo mixing, but also film and broadcast mixing and Dolby Surround mixing in the new facility,” Haseleu says. “Dolby has agreed to provide us with their encoding and decoding equipment.” The move will be accompanied by the installation of new equipment, including an SSL board. In addition, Haseleu says, “Video post in the new building will be based on Betacam audio-for-video editing and WaveFrame digital workstations.”

About 550 students are enrolled in the Recording Industry Management program. Half are engineering and production oriented, the other half are interested in business and management.

According to Haseleu, approximately 50% of the students are from outside Tennessee, including a handful from Canada and Europe. But most graduates end up working in Nashville for a variety of companies, such as record labels, music publishing companies, artist management and so forth. Many of the audio people find jobs in Nashville studios. Some have become independent producers in TV and film. Others have gone into professional equipment sales and installation. A pocket of graduates have gone onto L.A., and another pocket has ended up in Orlando, working at the Disney or Universal studios there.

A more isolated, albeit idyllic, location is offered by The International Film & Television Workshops, a series of intensive summer courses in Rockport, Maine. According to David Lyman, founder and director, more than 1,000 students spend a week or two at the Workshops each summer. While the focus of the program is visual—with heavy emphasis on courses in cinematography, acting, writing, directing and producing—there are also workshops in film and video editing and in audio.

Two courses being offered for the first time this summer are Introduction to Post-Production and Sound for Feature Films. The post-production workshop covers both film and video editing and lets students work with

recorded narration, a musical score and soundtracks, and sound and visual effects. The goal is to “lay down tracks and shape the score into a finished piece.” The Sound for Feature Films workshop explores the technical side of music, narration, effects and dialog for movie soundtracks.

One of the largest private institutions specializing in audio recording is Full Sail Center for the Recording Arts in Winter Park, Fla., a suburb of Orlando. At any one time there are an average of 525 students enrolled in the school’s 12-month program, according to Garry Jones, senior vice president. Full Sail now offers a new Recording

Equal Opportunity

While students in audio engineering and production programs are predominantly male, women are making inroads. Typical of most schools is the ratio at Hollywood’s Institute of Audio-Video Engineering, where 20% of the students are female. At the Recording Institute of Detroit, the number hovers at 25%, and at Middle Tennessee State University it stands at just over 30%. The Art Institute of Pittsburgh weighs in at the high end of the scale, reporting that almost 50% of the students in its audio program are women, while Full Sail Center for the Recording Arts is at the low end, with women making up 12% of its student body.

Michigan State’s program has the highest percentage of women of all the schools surveyed. Nearly 50% of the students in its advanced audio courses are women, and in the basic class this term, about 55% of students are women.

—PC

Arts specialized associate’s degree.

The school places a heavy emphasis on audio post and is well-equipped with digital audio workstations. Gary Platt, Full Sail vice president and senior audio engineer in the professional services division, says, “In audio post, we’re in Synclavier Land. We have three Synclaviers and two Direct-to-Disk™ units in-house. A good portion of what we’re doing in audio-for-video post is done with these workstations. Often, we do all the posting with them, and when it comes to the mix, it can go directly from those rooms through a patch bay system into our main Neve

room. At the Neve console, all the Direct-to-Disks and the outputs of the Synclaviers can be mixed at the console while you watch the picture. Then that’s mixed back down to the 1-inch, or over to another couple of tracks of the Direct-to-Disk.”

Full Sail is also equipped with Adams-Smith 2600 and TimeLine Lynx synchronizer units, with students making considerable use of the sync gear in the more advanced courses. They mix audio-for-video in the analog domain, as well as in the digital domain on the Synclavier. “They’ve got to get to know both,” Platt says. “What happens, though, is that they start moving things around on analog tape and then see how easy it is to do on a digital workstation. It’s a bit of a mind-blower.”

In the advanced course, students post a 30-second commercial on the Synclavier, making up the music, dialog replacement, sound effects, and doing all the mixing. Platt got permission from General Mills to use a Cheerios spot, which the students are given *sans* sound and must put together themselves. In another class, students take an existing out-of-sequence tape, link two 24-tracks with 3/4-inch video, and do some offsetting to make things work.

Full Sail is currently putting in Edit View, the new Synclavier program that uses a CMX edit list on a disc to pick the sound of the edits right off of the reels and record them automatically into the Direct-To-Disk, after which the sounds are placed where designated in time code.

As might be expected, audio-for-video is also emphasized at two Hollywood-based institutions: Trebas Institute and the Institute of Audio-Video Engineering. The Trebas Institute of Recording Arts, run by David Leonard, past president of the Music Industry Educators Association, offers courses in Record Producing, Audio Engineering Technology and Music Business Management.

Trebas has three terms a year, with a total of 360 hours of instruction. In addition, students receive 60 hours per year of hands-on studio time at Red Zone Studios, a 24-track facility in Burbank. Resources include several audio-for-video workshops, an audio-for-video lab and instruction in audio-for-video theory.

The Institute of Audio-Video Engineering highlights the post portion of

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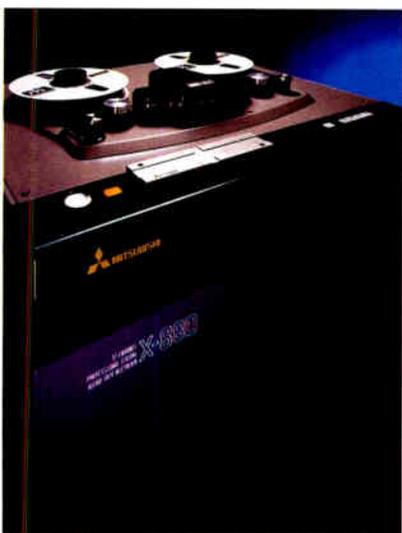
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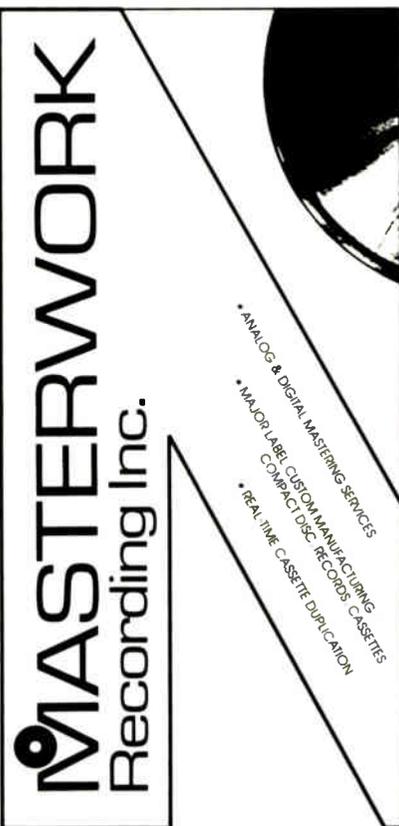
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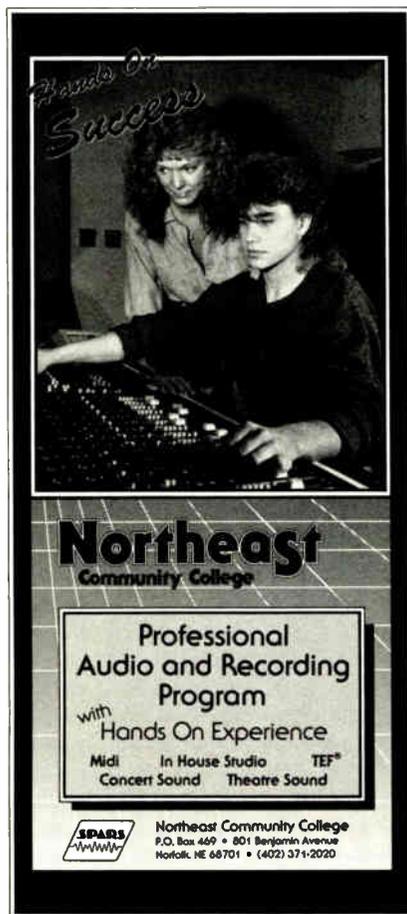
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its curriculum, according to administrator Lynn Scott. The school offers a nine-month program. It has 50 students at any one time; about 100 students attend on an annual basis in rotating eight-week terms. Subjects include audio engineering, video production, video and audio editing and post-production, music theory, electronics and studio maintenance.

Students learn to create, assemble and mix dialog, effects and music tracks and to synchronize them to video. The course includes an introduction to audio-for-video post. Everything is taught in a 24-track facility.

Students come to the Institute from all over the country and the world. Most are between the ages of 18 and 30, says Scott, "but we also have older recording engineers who need to beef up their education."

Most graduates of the program find work in the Los Angeles region soon after they graduate, "because there's so much more work in this area than anywhere else," Scott says. "Most want to do post for film and TV, but those jobs are the hardest to get because they're union. No one seems to want to leave that gig once they get in." ■

Peter Caranicas is a freelance writer living in Pleasantville, N.Y. He is the former editor of Millimeter magazine.

POST NOTES

Arthur Co. Opens In-House Post Facility to Public

The Arthur Co., producer of sitcoms and action/adventure shows for broadcast and cable, has made its in-house post-production facility available for use by the outside world. Called The Last Stop, the facility sits in an 8,000-square-foot area on the Universal Pictures lot in L.A. Its suites include a video online bay that handles 1-inch and Betacam, two video offline bays set up for Beta, and six sweetening studios.

Each of the audio studios is tailored for a specific post procedure: mix, sound effects prelay, MIDI/music, ADR/narration, and transfer. The mixing stage, acoustically designed by Brett Thooney of Boto Design, is equipped with a Neve 8108 48-input console and Westlake monitoring system.

According to Tom Buel, executive

in charge of post-production, an increase in the number of shows enabled the company to fully amortize its equipment: "Rather than pay a thou-



Arthur Company

sand bucks per episode for sweetening, we could take \$200,000 and build ourselves a sweetening studio. It made more sense. We created this huge monster that has to eat, and it's gotten tough out there now."

The Arthur Co., 17 years old, built its first post studio in 1986 at Hollywood Center Studios. It later made a partnership agreement with MCA/Universal and produced 24 episodes of *Air Wolf* for USA Network, rounding out Universal's syndication package. Recent Arthur Co. work includes 104 episodes of the new *Dragnet/Adam 12* series.

Coley Sound Transforms Audio for Old John Wayne Flicks

Post-production house Coley Sound Productions of Hollywood totally revamped the sound on 15 classic John Wayne films for Color Systems Technology, a film colorization company. The contract called for the splitting off of the dialog to a separate track and its later remixing with newly created music and sound effects.

According to Buddy Young, president of Color Systems Technology (the movies' copyright holder), transforming the black-and-white films to color was only half the battle. "These movies were from the '30s, and their soundtracks were unairable. We wanted to bring them up to today's standards, so we did the colorization work and hired Coley to do the soundtracks."

CST delivered 1-inch masters of the original films. Each is 69 minutes long; titles include *Blue Steel*, *West of the Divide*, *Man from Utah* and *Neath Arizona Skies*. According to Rod Ellis, president and owner of Coley, "The movies were so old there was practi-

cally no music on them—only a little bit of opening theme music and a little tag music at the end. The music was identical for all 15.”

After splitting off all the dialog tracks, Coley engineers redid the sound effects—gunshots, horse chases, fight scenes—on a Foley stage, with some in stereo. Coley also scored each film from scratch “in the same genre as the original music,” Ellis says, using Synclaviers and doing an orchestration-type of background. “It was quite an ordeal at first,” he adds, “but as we got into a rhythm, it went faster.”

The dialog was split off and cleaned up as much as possible. “Then we remixed using NED’s Direct-to-Disk 8-track digital format, which holds 25 minutes per channel of digital information,” Ellis explains. “We would lay down to that, then slice and dice and pull off ambient sounds, add our own, then put dialog back in again.”

Even with the original dialog in bad condition, the new soundtracks are surprisingly good, Ellis says. “Horses are horses, then and now. The whole thing is enlarged; it feels bigger.”

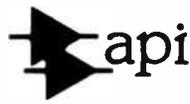
Russ Berger Designs for GTN, NBC

Russ Berger Design Group, the Dallas-based acoustical design firm, designed the expanded facility at General Television Network (GTN) in Oak Park, Mich. The 6,800-square-foot addition includes Surround Sound audio post rooms. About a year ago, Berger designed Edit Seven, an audio post-production control room at NBC’s Rockefeller Plaza headquarters in New York. According to consultant Richard Schrag, the room, originally designed in 1987 as a stand-alone control room, was recently redone to help post *Saturday Night Live*’s syndicated reruns, which require heavy soundtrack remixing. Berger is also completing a new edit suite for NBC affiliate WYNY-TV and renovation of the network’s studios in Brooklyn.

DAR Does ADR For Company Business

A DAR SoundStation with WordFit automatic dialog synchronization was used in the post-production of the spy drama feature *Company Business*, starring Gene Hackman and Mikhail Baryshnikov. The work took place at England’s Pinewood Studios. Martin Evans, supervising sound editor, had to deal with one replacement take for

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several of the main characters' key lines. He knew hand-editing the job would be laborious, so he and dialog



From the feature film *Company Business*, starring Gene Hackman and Mikhail Baryshnikov

sound editor Ian Fuller tried WordFit. Fuller sent the dialog on DAT over to DAR along with a 3/4-inch transfer of the film print. DAR special projects engineer Phil Meehan digitally transferred the new dialog to SoundStation, along with the original dialog from the U-matic as a guide track. Meehan produced a rough sync using SoundStation's edit functions, then applied WordFit processing to tighten up the new dialog to match the original. The new material was layed back to DAT and then transferred to mag.

POST BRIEFS

Elite Post, located in Nashville's "Music Row," recently added the Studer Dya-axis digital audio post and editing system. Since much of Elite's work originates on film, with most of it then going to D-2 as well as other video formats, the facility needed a system to resolve problems with various time code and sampling rates used on its wide range of projects...Pyramid Teleproductions, Dallas, installed a new Rank Cintel Turbo MkIIIC telecine and DaVinci Renaissance color correction system to handle its growing volume of film-to-tape transfers. Meanwhile, Post Effects of Chicago is using its new Rank Cintel Ursa all-digital telecine to transfer 16mm and 35mm work of com-



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mercial directors to video...Alpha Lyracom Space Communications, private distributor of satellite TV signals, has purchased a BTS TVS/TAS 3000 wideband switching and control system facility from BTS Broadcast Television Systems to manage the volume of TV and data signals that pass through the company's Homestead, FL, facility. Last year, Alpha Lyracom (also known as Panamsat) handled video for such clients as CNN, ABC, CBS and NHK...Video Post & Transfer of Dallas has installed four sets of Tannoy System 215 DMT studio monitors at its new post center near Love Field airport...Cable's Family Channel, now switching to all-digital audio and video operations, is converting to D-2 video recording and installing a Lexicon Opus room. By fall, the Family Channel expects to be posting in-house the material it now sends to Hollywood...New England Digital has sold another digital audio system to a German public broadcasting station. Other recent NED international sales



Colorist David "D.C." Cardinali with assistant colorist Cindy Ryan in the transfer suite at Post Effects, Chicago

include systems purchased by Japan's N.T.V. Video Corp., BBC Scotland, Paris-based Studio Time and Helsinki's Pro Video...Film Craft Video, in Farmington Hills, MI, recently opened its third online edit suite to meet the demand of Detroit-area producers. The room can handle Betacam, 3/4-inch and 1-inch video formats and includes a Chyron Scribe character generator and NED System 10 digital effects. The firm's two older suites continue to offer Grass Valley 151 edit control, 200 switcher and Kaleidoscope digital effects with KURL, as well as Chyron Super Scribe and center-track 1/4-inch audio recorders. ■

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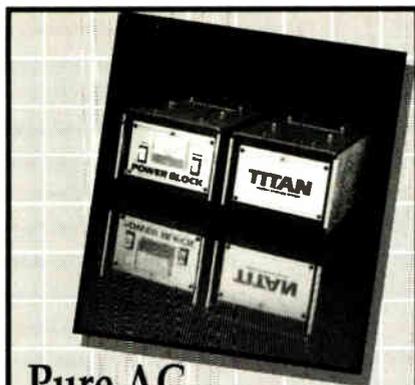
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—FROM PAGE 34, SOUNDTRACK DESIGN

conceived and structured, it is helpful to examine how humans tend to organize and process the sights and sounds of the real world. "Because of the priorities of the brain, the audio channels are suppressed relative to the visual channels," Murch explains. "We attend first to the visual and then augment that with sound." However, this "supplementary" information can have a major effect on our experience of what we are seeing. That is, we tend to "see" things differently depending on what we hear at the same time. You can confirm this easily by walking down a city street wearing headphones and observing how your environment looks and *feels*, depending on which cassette you have in your Walkman.

It is also important to recognize that we generally don't pay equal attention to all of the auditory stimuli we are exposed to in our immediate environment. Depending on our mood, expectations and any number of other psychological and emotional variables, we ignore much of the acoustic energy that reaches our ears and, to a large extent, simply hear what is important to us at any given moment. To heighten awareness of just how complex our aural environment is and how much we filter out, Murch recommends that students "spend a lot of time with their eyes closed. If possible, put a blindfold on and walk around with a friend who'll make sure you don't get run over. That forces you to pay conscious attention to a whole universe [of sound] that surrounds you all the time."

By doing this kind of exercise, you will become more aware of the rich palette of aural "colors" available when creating a soundtrack—and how to hear these sounds as separate entities, rather than an amorphous mass. Varney describes how these individual elements can then be manipulated, depending on the desired effect: "We are painting a very special picture with sound, and we can alter the audience's experience of a scene simply by going with a different element, going with a different balance."

Listening to Movies

The next step is to begin studying the ways in which our expectations of how a film "should" sound differ from how we perceive sound in everyday life. "I think the sound designer has to be aware of how sound has been done historically," says Burt, whose own

knowledge of the history of film sound seems encyclopedic. "Each person who comes into a movie has seen thousands of other movies, and you have to take that into account. That doesn't mean you have to copy, it just means that you have to know [about it]. I think the best education a new artist could have, in any field, is to learn all the way up to where the frontier is, and then take those few steps beyond it."

The difficulty is that despite our vast experience with *watching* films, we are not in the habit of consciously *listening* to them. The images on the screen are often so overwhelming that we remain relatively oblivious to the sounds accompanying them. It becomes necessary to find means to direct our attention, at least temporarily, to the soundtrack alone.

One simple way this can be accomplished is by listening to a soundtrack without looking at the accompanying images. Switch off the lamp in the film projector, disconnect the video input to your monitor or simply close your eyes. Listen carefully, make a list of the individual sounds that you hear and try to imagine what the scene might look like. Also, try to discern what is going on dramatically within the scene. Then, replay the scene with the picture. Because you have broken down the track into its component parts, you can now more easily consider how they are arranged in relation to one another and in relation to the visuals.

The opposite approach is also instructive. Turn off the sound and just watch a scene before listening to it. Ask yourself, "If I were building up a soundtrack from nothing, what sounds would I include and what would I leave out? On what basis would I make those decisions?" Then, listen to what the filmmakers actually did with the scene and compare it to what you had in mind.

The Soundtrack as Art

Once students become better listeners, the soundtrack can be put back into context and even more probing questions can be considered. Why were particular sounds selected or emphasized? What psychological or emotional effect is a particular use of sound intended to have on the audience? What are the filmmakers trying to communicate through sound?

Sometimes the answers to these questions are very uncomplicated. Often a door slam is *just* a door slam.

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LIMITLESS
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But there are many instances in which a soundtrack is operating on more than one level. Burt says, "You can do something in the soundtrack that on one hand may be sort of literal and has a meaning just within the naturalness of that scene, but on the other hand—if you've chosen the right sound—has a whole other meaning that comments on the scene as well." (See sidebar: "Designing a Scene," p.31.)

Motivating students to look for the intention or meaning behind a particular use of sound can be difficult at first. It's as though you were asking them to violate some unwritten taboo.

This is "a tribute to the coercive power of film," Murch says. "A film has its own authority that seems to deny the fact that anyone was involved in it or made it happen."

Stewart, who trained numerous people to be re-recording mixers during his 50 years in the film industry, remembers how one group of students reacted when he introduced the subject of aesthetics: "When we started out, I didn't run picture or track. I talked to them about the relationship between what you see and what you hear in a film. I think they got a little impatient with me. They just wanted to get to it!"

Being eager to spring into action is a natural tendency, but deciding what approach is appropriate for a given scene is not simple. Don't despair—asking the right questions is half the battle. "What is the movie about at this point? What is the picture showing us? How should the soundtrack relate to that? It's not just the literal selection of sounds," Burt maintains. "It's the selection of sounds in relationship to picture—picture that's just happened, that's about to happen, that's happening right now."

Stewart also stresses the importance of being aware of the "relationship between the visual and the aural" and having a sense of when a particular combination *works*. "I can't judge music, because I'm not a musician," he says, "but I do know when music fits with what's on the screen." Students need to develop an understanding of how *all* parts of a film relate to the whole.

Murch suggests an interesting way to explore the relationship between sound and image: "Go to the art library and take out a book of paintings. Then, go to the music library and try to choose music that stretches the point of a particular painting as far as it can be stretched." Murch uses impressionist painter Edgar Degas' *L'Absinthe*, a picture of two dejected-looking people sitting in a cafe, as an example. "You say, 'What is this picture about?' and if it's the vacant expression on this poor woman's face, then choose music that gets at that, rather than the fact that she's in a cafe." By doing this type of exercise, Murch says, you begin learning how to "get at a feeling that is neither in the picture nor in the soundtrack, but is the result of a synthesis of the two, which is what it's really all about."

Education and Beyond

Learning to interpret the dramatic requirements of a film and design a soundtrack that meets those needs takes a great deal of time, patience and *practice*. Therefore, another essential part of a student's education is getting hands-on experience using sound as a storytelling tool. Exercises that provide this kind of training include putting together a simple story using sound alone (such as a short radio play or audio documentary); creating an entirely new soundtrack for an existing scene from a movie or television show; and, best of all, designing a soundtrack for a student film. The opportunity to

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experiment and work on projects with other students who share an interest in exploring sound's creative potential is one of the most productive aspects of being in school.

What happens when you leave school and begin to pursue a career in film sound depends entirely on the individual. "It's a little bit like Alice looking at the mirror," Murch says. "By the power of her imagination, she found herself on the other side of the mirror. I think all of us who work in film have gone through something like that kind of experience. And it's good that we do, because what happens when you're inside this fairyland is that you're endlessly faced with a series of mirrors and walls. And by some effort of will, imagination, persistence or luck, you have to continue to get through these." Regardless of how good your preliminary education has been, it is necessary to maintain an open and flexible attitude, because mastering any art form is a *very* long-term proposition.

"Someone who says, 'I am trained' is too stiff for this business," observes Murch, who has taught and lectured extensively. "That's why there's always been this antagonism between film schools and the industry. It's very similar to the antagonism between the combat soldiers and the West Point lieutenant who's had lots of theory, but in combat is going to try to apply that theory too rigorously. Combat is something that has its own laws, and you have to be alive to the moment, not apply your theory. Too much theory—and you can debate what that is—is dangerous."

Varney also lectures and conducts seminars occasionally and holds a similar opinion. "I used to tell people, 'You've got to come [into this profession] and in some ways unlearn what you've learned in school.' What I was really trying to say to them is, you've got to come in and realize, 'Okay, I've got this good education behind me, but I can learn from these people, too, because they're doing this every day. So I'm going to keep my eyes open, I'm going to ask the right questions and I'm going to *listen*.'" ■

John Michael Weaver is an assistant professor and Recording Arts Program coordinator at Loyola Marymount University in Los Angeles. He wishes to acknowledge the invaluable assistance of his research assistant, Pete Elia, during the preparation of this article.

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C O A S T

L.A. GRAPEVINE

by Amy Ziffer

If the hottest news three months ago was the demise of Record Plant, the hottest news of this month is its apparent resurrection. (Is there anyone who didn't expect it?) At the studio's recent equipment auction May 10, one potential buyer walked in to find the receptionist looking like she wanted to tear

—CONTINUED ON PAGE 146

Sessions are underway at Brooklyn Recording, the new studio in the DeMann Entertainment complex in L.A. Pictured (l to r) are Jim Babjak and Pat DiNizio of The Smithereens, producer Ed Stasium, engineers Scott Stillman and Paul Hamingson, and Bill Dooley, director of recording.

SESSIONS & STUDIO NEWS

SCHOOLS IN SESSION

by Jeff Forlenza and Terri Stone

So how do students in recording schools get the hands-on experience they need to get their collective foot in the doors

hind-the-board experience they need. And many engineering programs branch out into other campus activities such as theater, radio and TV in return for practical experience for their students. With these opportunities as well as student internships, ambitious students have many chances to get their hands on some equipment.



University of Miami students getting their hands on the automated Sony MXP-3036 console during a student session.

of major recording studios? Many schools offer their facilities free of charge to local bands for recording demos while giving students the be-

In Florida, John Monforte, assistant professor in Music Engineering at the University of Miami, reports: "Our program depends on a cross-fertilization of talents. Upper-class students earn a 'license' to be in charge of the studio, while less experienced people act as their seconds and get hands-on training." Academic coursework in the program stresses the fundamentals, but after class students are allowed to put theory into practice and record whomever they choose.

Student recording opportunities are usually limited to raw, local bands or the school's performing groups, but some lucky U of M engineers can boast of capturing Pat Metheny on disc. The U of M alumnus performed big band arrangements of his own work accompanied by the university's concert jazz band. Five students aided Monforte in the effort, and the completed record-



C O A S T



Webster University student during a recording session in the 16-track recording studio.

ings were "presented to Metheny before he finished packing up his guitars."

Jim Rosebrook, director of the 20-year-old Recording Workshop (Chillicothe, OH), reports that of the 200-hour curricula at the Workshop, 125 is hands-on experience. Students take classes during the day and work on sessions at night. Students can choose from one of six studios to record local bands: from the 8-track, media production Studio A to the 24-track, Steven Durr-designed Studio F. Some of the bands that have recorded at the Workshop have gone on to major labels and national recognition: **The Toll** signed with Geffen, and the increasingly popular **Royal Crescent Mob** (who cut their first album in 16-track Studio D) signed with Sire.

For those seeking more experience, the Workshop offers optional one-week programs. The Advanced Engineering program provides 60 hours of in-studio experience to refine recording and mixing skills; and the Studio Maintenance program teaches

routine maintenance and tape machine alignment skills, with 20 hours in the classroom and 20 hours in the studio.

The existence of a formal recording program at Webster University (St. Louis, MO) may only be a few years old, but the staff and students are charged with ambition and enthusiasm. Participants come from "all over the campus—theater, video, music: it's very popular," says assistant professor of media communications Barry Hulker. Part of that popularity might be attributed to the freedom and variety of projects offered. Students can do on-location and

post-production sound for a 16mm film, or take part in a live half-hour radio play, all aspects of which (performing, recording, Foley and effects) are handled by the students. Webster's strong drama department encourages sound design for theatrical productions. The media communications program

—CONTINUED ON PAGE 142

N.Y. METRO REPORT

by Dan Daley

AKY Recording Supplies Inc. has been doing DAT duplication for nearly four of its 13 years in business, and company president Sandy Sandoval reports that DAT duplication has shown a gradual but substantial increase

—CONTINUED ON PAGE 147

Carl Perkins began recording a new album for Platinum Records International at the Edison recording studio, a division of National Video Center. Seated (l to r) are Carl Perkins and producer Stan Vincent; standing (l to r) are The Edison's chief engineer Gary Chester, bassist Greg Perkins (Carl's son), Platinum Records president Rudy Maldonado and Paul Shaffer.



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—FROM PAGE 141, SESSIONS & STUDIO NEWS

also stresses 2-track stereo, so students must go into the field with a pair of Neumann KM84s and a portable DAT machine and record and mix any event of their choice.

The 1-inch, 16-track recording studio, although non-profit, is run like a business. Students are taught the studio basics, of course, but also learn such important concepts as "time equals money in the real world." Hufker says that bands from regional music hubs like Austin often come to the university to brush up on their skills before going on to major label studios. Local luminaries such as Robert McFerrin (Bobby's father, who was in to sing spirituals) are also recorded by the students.

Don Puluse, chair of the Music Technology Division at the Berklee College of Music (Boston), reports their Music Production and Engineering program is a project-oriented curriculum. All courses have two or three required projects per semester. In the Music Production for Records course at Berklee, student producers are entirely in charge of a musical project and must oversee all aspects: budgeting, booking the studio and hiring engineers and musicians—all fellow Berklee students. Though the faculty covers song analysis and planning productions in the classroom, no teachers are

involved in the studio. And every year Berklee issues a CD of select student projects. To ensure interaction with other musicians, student producers cannot work on their own material until their final semester at Berklee.

In Las Cruces, NM, the engineering program at New Mexico State University is "very hands-on," says composer and professor Warner Hutchinson. "Audio recording classes are kept small so everyone can use the studio." Students undertake a variety of projects designed to train them in different aspects of the studio. For a final project, they're required to record and mix a live solo or duo performance.

Lecturer Josh Hecht teaches in the Broadcast Communication Arts and Music Recording Industry certificate programs at San Francisco State University. Hecht stresses basic theory before students get behind the board: "We try to combine the knowledge of basic signal flow and how things really work, then the student gets hands-on experience." At SF State, bands get a demo and students get the experience from mic placement through 24-track mixdown of the project.

In Detroit, hands-on experience is required: Students at the Recording Institute of Detroit have a requirement of four recording projects to complete their degree. Chief Administrator Robert

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B E A T

by Shirley Kaye

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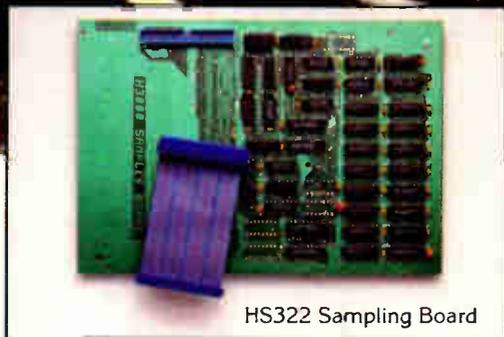
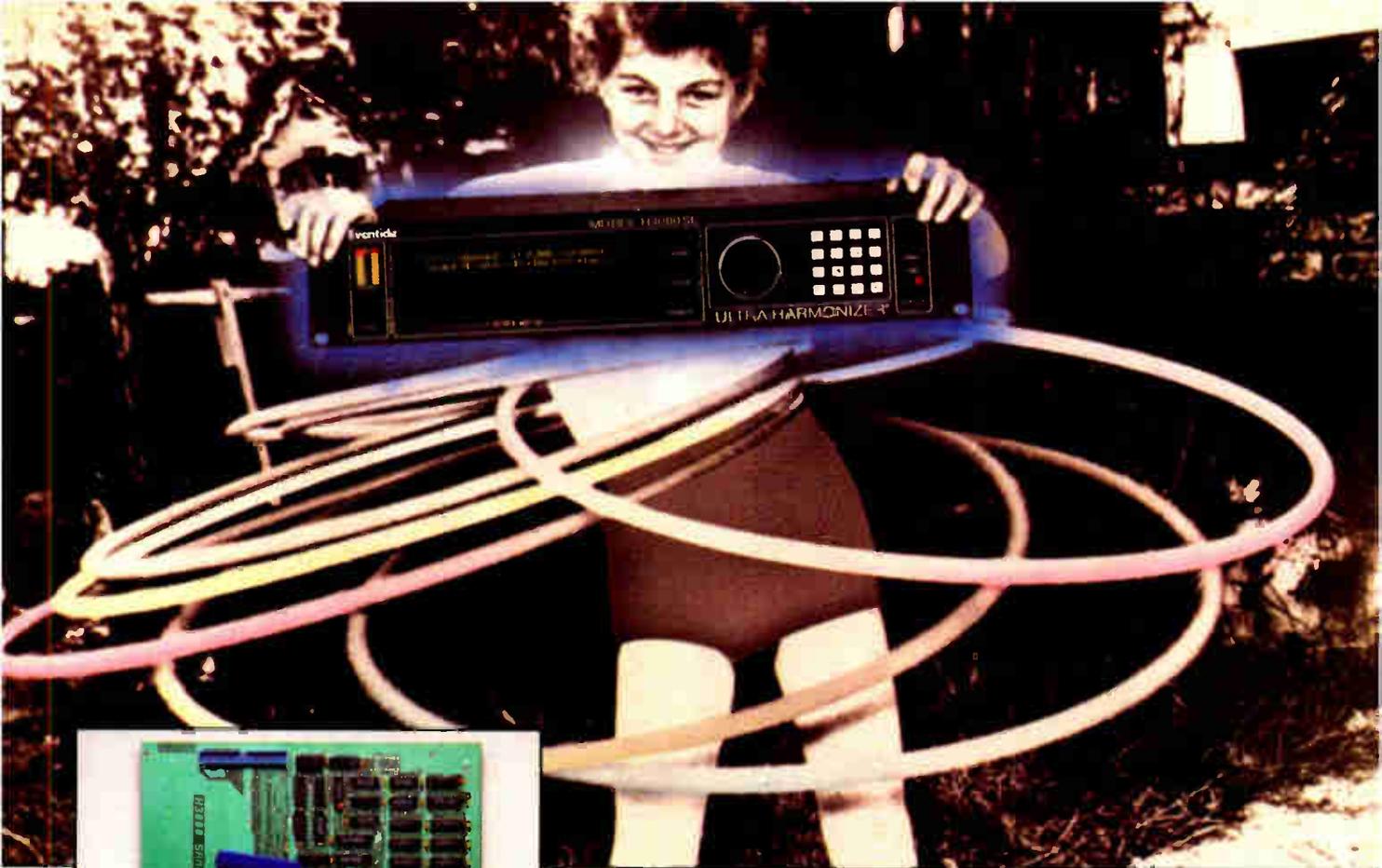
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Shirley Kaye is SPARS Executive Director. SPARS can be reached at (800) 771-7727, or by writing to 4300 10th Avenue, Lake Worth, FL 33461.



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For those looking for financial aid...Grammy-winners Lionel Richie and Michael Masser, as well as ASCAP, BMI and the Los Angeles chapter of NARAS, are helping to sponsor full and partial scholarships in the certificate program at the UCLA Extension, including Music and Film Scoring and Recording Arts and Sciences. For more info contact the Performing Arts Program, UCLA Extension, 10995 Le Conte Ave., Room 437, Los Angeles, CA 90024, or call (213) 825-9064.

SOUTHERN CALIFORNIA

At Skyline Recording Co., Topanga, violin virtuoso Jean Luc Ponty was in mixing his new album for Sony Music with co-producer Brice Wassy. Engineer Peter R. Kelsey was at the console with Luis Quine assisting...Dodge City Sound (Glendale) reports the following activity: Warren Zevon laid down tracks for a new album with producer Waddy Wachtel and engineer Mark Desisto, with Jeff Shannon assisting; and San Francisco group Snyder finished mixes for their debut album with engineer/producer William Henry Poppy... Paul & Mike's Recording Studio in Los Angeles has been busy with the likes of Leo Kottke recording his new album for Private Music, with Steve Berlin (Los Lobos saxman) producing and Paul Dugre engineering...Entourage Studios of No. Hollywood had Brent Spiner, better known as Lt. Commander Data from the TV series *Star Trek, The Next Generation*, in recording with engineer Keith Blake. We're sure the record will sound precisely sparkling, but will it have any soul?...Little Feat recorded their first album for Morgan Creek Records at Conway Recording Studios (Hollywood), with producers George Massenburg and Bill Payne...

SOUTHWEST

Poi Dog Pondering were at Austin's Arlyn Studios working on their upcoming Columbia release, *Volo Volo*. Two sets of producers have been working with the band, Clive Langer and Alan Winstanley (Madness, Elvis Costello), and Jerry Harrison (Talking Heads, Casual Gods). David Vartanian

engineered the Harrison-produced tracks. Although lead dog Frank Orral was concerned about working with outside producers (their last two albums were self-produced in conjunction with Mike Stewart), he told *Mix* he was very happy with the results...

NORTHWEST

The Plant Recording Studios of Sausalito, CA, reports John Lee Hooker (the Kingsnake himself) and Carlos Santana recorded and mixed two cuts for Blue Rose Productions. Arne Frager and Devon Reitveld engineered the session...Guitarist John Fahey recorded his new release for Burnside Records at Spectrum Sound Studios of Portland, OR. Terry Robb and Don McCloud produced, and Mike Moore engineered the solo guitar sessions...The Machete Ensemble under the direction of John Santos has been working on their second album of Afro-Cuban jazz at Bay Records in Berkeley, CA...

SOUTHEAST

Evans Brothers Studio, Spartanburg, SC, has been busy recording tracks by George McCorkle (ex-Marshall Tucker guitarist) and co-writer Mike Battle for McCorkle's comeback solo release, with Duane Evans producing and engineering...The Tornados are spinning again: At Sound Emporium of Nashville, the Texas Tornados teamed with producer Bill Halverson and engineer Gary Laney to track and mix the follow-up to their successful debut...At Miami's Criteria Recording Studios, Swedish metal guitarist (formerly with Alcatraz) Yngwie Malmsteen started tracking his first release on Elektra. Engineering and co-producing with Malmsteen was Simon Hanhart...

NORTHEAST

Hooters bassist Fran Smith was at Iris Sound (Royersford, PA) producing a demo for the New Jersey-based blues/rock band Stinger. The 24-track project was engineered by Paul Brown...At New York's Prime Cuts Studio, producer Justin Strauss was in Studio A remixing C&C Music Factory's "Things That Make You Go Umph" for Columbia Records...Arista recording artists Whitney Houston and Jeffrey Osborne were working at Science Lab Studios in NYC on their respective projects. Arista's Rob Holt gave production supervision, and Mikeal Ifversen engineered...

NORTH CENTRAL

Producer Michael Powell was at Studio

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MADE IN U.S.A.

A (Dearborn Heights, MI) cutting tracks with vocalist Vickie Winans. Eric Morgeson engineered...Michelle Shocked was at Chicago Trax to record a gospel track with Pop Staples & the Staple Singers for her upcoming LP, *Arkansas Traveller*. Other collaborators include Doc Watson, Los Lobos and Gatmouth Brown...

Michelle Shocked pictured here at the Chicago Trax console with her engineer Glen Rosenstein.



STUDIO NEWS

Saxman Richard Elliot christened his new facility in the Tampa, FL, suburb of Brandon with the completion of his new album for Capitol at Suncoast Recording Inc. Suncoast features a Trident 36-input console, an Otari 24-track recorder and extensive MIDI and outboard gear...Billed as "Toronto's first affordable 24-track digital recording studio," Pizazzudio Recording Studio opened in May at 3615 Weston Road, Unit 10. Owned and operated by Barry Lubotta, the studio offers free parking, free multitrack tape on every new session and project rates of \$100 per hour...

As always, send nationwide sessions and studio news to sessions editor Jeff (Guido Coasto) Forlenza, c/o *Mix* magazine, 6400 Hollis Street, Emeryville, CA 94608. ■

—FROM PAGE 140, L.A. GRAPEVINE

her hair out from the strain. It seems that the word had just come down that all the items for which sealed bids had already been received were *no longer for sale*. In accordance with Ziffer's Law, which states that all business dealings must be as complex as possible, Hollywood developer Albert Sweet purchased the real estate only, while Rick Stevens of Summa Music Group Studios agreed tentatively to purchase the equipment as a lot and

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reopen the studio pending completion of a lease agreement with Sweet. All the papers were being signed while this was being written, but one question remains unanswered. When's the party? [Ed. Note: Record Plant was purchased as we went to press. See story p. 9.]

Soundworks West has also seen some changes over the past few months. As of April 1, co-owner/operator Alan Ramer officially left, and former MCA Records president Bob Siner was appointed president and CEO. This future Eastern European entertainment mogul has his fingers in a lot of pies, including a Polish record label and distribution, animation and merchandising company. In addition to Siner's appointment, two vacant seats on the board of directors were filled by Rick Frio (former VP of marketing at MCA, and current management company and label owner), and Marshall Blonstien (president of Compact Classic Disc). Siner says the experience and background Frio and Blonstien bring to their positions will "broaden the base" of Soundworks West. Ramer, meanwhile, is said to be working on an unidentified video project.

The company declared Chapter 11 earlier this year, and Siner says a buyout or joint venture is a possibility for the future. "Our past problem was a lack of responsibility," Siner says, "but there's been an improvement in staff morale, and the studios are all pretty well booked. Creditors have seen a growth in business in the few short weeks we've been working at it, and they've been patient."

Across the city, another studio has found a home in Burbank, media

capital of the world. Present Time Recorders, which has been located in North Hollywood since 1977, is making the move as I write this. The old site, which will be torn down, is still operating as the new studio is being built.

Owners Bob and Grace Wurster are upgrading to a bigger room and lots of new and "new used" equipment, but perhaps the most essential feature of the facility (according to Grace) is the central air conditioning, which should keep sessions cool even in the extreme heat of Valley days! New and existing clients (such as Jeff Dahl, The Creamers, and The Lazy Cowgirls) can expect to find a Harrison 3624 board with Allison automation, MCI recorders, a Sony DAT recorder, Altec 604E main monitors, and lots more. Present Time Recorders' new address is 4029 W. Burbank Blvd., Burbank, CA 91505, tel: (818) 842-5506.

Finally, I was privileged to attend a Cinema Digital Sound demo at EFX Systems that was even more impressive than the unveiling last year at the Director's Guild Theatre. A small audience was treated to clips from the upcoming FilmQuest release *Final Approach*, which makes full use of CDS's amazing directionality and wide dynamic range. *Final Approach* has the honor of being the first feature film to be recorded, posted and mastered entirely using digital media. Based on the demo, this film looks to be worth catching for the sound alone.

Send studio news to Amy Ziffer, c/o Mix's Southern California office, 19725 Sherman Way, Suite 380, Canoga Park, CA 91306; or call (818) 567-1429 or fax (818) 709-6773. ■

—FROM PAGE 141, N.Y. METRO REPORT

in that time. This summer Sandoval plans to add four more Panasonic 3700 decks to the pair he already uses, noting that 75% of the duplication masters he sees now are on DAT. "I expected DAT to become a viable medium in the industry years ago, and that's why I jumped into it early," he says. "But I had no idea that people would be using it as the primary mastering source. I recommend that they have some other medium as a backup as well."

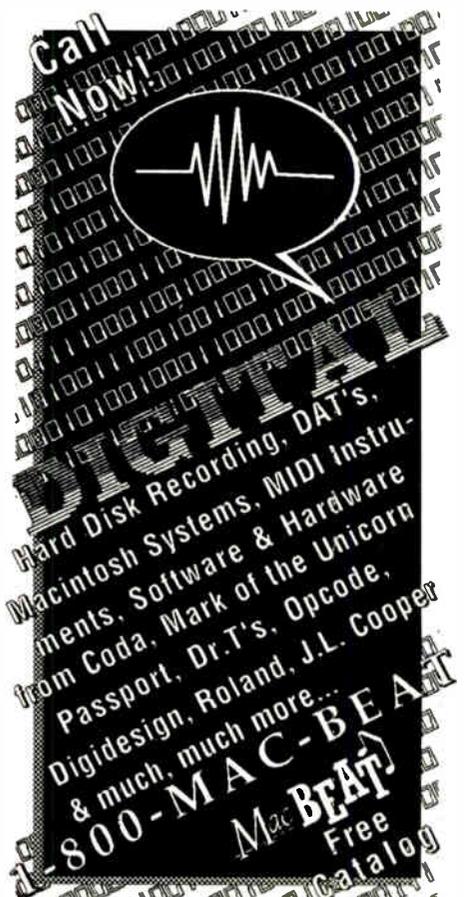
Clients run the gamut from major record labels to independent artists and producers, Sandoval says, most requesting analog cassette duplication from DAT masters with relatively little

DAT-to-DAT duplication. While he carries Ampex, 3M and BASF DAT cassettes for sale, Sandoval reports that Ampex gets the lion's share of DAT sales, which he attributes to carry-over brand loyalty from analog tape.

No more concerts on the pier: After 25 years of top-name *alfresco* rocking, first in Central Park and for the last 10 years on city-owned Pier 84, the most recent producer of the shows, Radio City Music Hall Productions, has called it quits, reportedly after losing about \$2 million over the last two summers. An amusement park will replace the music. The shows were initiated in 1966 by impresario Ron Delsner, who once paid Jimi Hendrix \$100 to open for the

—CONTINUED ON PAGE 176

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—FROM PAGE 96

impressive performer, whether used as an entry-level monitor in a home or MIDI-based studio or as an additional reference in a larger facility. Obviously, these speakers are not likely to put much of a dent in the UREI, Westlake or Meyer markets, but at \$180/pair, check 'em out.

Yamaha Pro Audio, 6600 Orange-thorpe Ave., Buena Park, CA 90620; (714) 522-9011.

Sony TCD-D3 DAT Walkman by Paul Potyen

The Sony DAT Walkman™ certainly lives up to its name. This is the world's smallest portable DAT recorder, weighing in at less than a pound, and measuring 3-3/8x1-5/8x5-5/8 inches, including the detachable battery pack.



While designed originally for the Japanese consumer market, its compactness and digital I/O make it an attractive product for pro audio as well.

Supplied accessories include the above-mentioned rechargeable battery, which powers the unit for up to two hours; AC adapter/battery charger; carrying case; two stereo mini plug-to-dual phono plug audio cords for line in/out; and a cable for digital recording via the consumer fiber optic format.

The unit uses 8x oversampling, dual 18-bit D/A converters for playback. Frequency response at the 48kHz sampling rate (standard mode) is 20-22k Hz with signal-to-noise ratio of more than 90 dB. THD is rated at less than 0.008% (standard mode, 1kHz signal input), while wow and flutter is immeasurable. It also uses 64x oversampling to record in either long-play mode (32 kHz) or standard mode (48 kHz); 44.1kHz recording is available only via the digital input. The same stereo mini jack is used for both mic- and line-level analog input. Separate switches are used to select either line or mic level, and standard

Drum Tuning: A Comprehensive Guide to Tuning Drums

by Jeff Forlenza

Regardless of the size of your drum room or the signal processing gear used to produce that killer snare effect, you can't get a good sound from live drums unless they're tuned properly. To help engineers, roadies and drummers tune those tubs, Larry Nolly has written *Drum Tuning: A Comprehensive Guide to Tuning Drums*.

Don't be put off by Nolly's wary attitude toward sound engineers. Nolly warns, "One last thing you should be aware of is an incompetent or inexperienced sound technician." Instead of slamming technicians and pitting drummers against engineers, Nolly might have stressed sound engineers and drummers working together. Aren't there drummers who also fall under the title of engineer and producer? And shouldn't a second engineer know when to tune a drum head rather than duct-tape it?

Aside from Nolly's bias, this is a straightforward, no-nonsense book for anyone who wants to attempt live drum tuning. Though Nolly concedes that tuning is a subjective practice, he cites common variables that affect any drum's sound: which heads to use, the tension of the heads, the relationship of top and bottom heads, the acoustic relationship of each drum to another and muffling. He then provides an in-depth explanation of how those variables affect everything from pitch to projection. He even gives a few suggestions to eliminate the inevitable and troublesome snare buzz.

Priced at an affordable \$7.95 and published by Drumstix (Wilmington, Del.), *Drum Tuning* is available at your local music store or by mail through the Mix Bookshelf: (415) 653-3307 or (800) 233-9604. To paraphrase Nolly's overprotective advice to mixing engineers and technicians: keep the duct tape away from the drums until you've really tried tuning with your drum key. Drummers and sound engineers should work together, and both would benefit from this book.

play (SP) or long play (LP) modes. A third switch inserts a -20dB attenuator into the mic input.

Considering its compactness, the unit is designed with remarkable efficiency. Input switches and jacks are located on the right side; output and power jacks are on the left; the LCD window is on the front; and transport controls are on the front and bottom (accessible even when the unit is nested in its carrying case). Thumbwheels located on the bottom are used to adjust record level and headphone level (headphone out is via another stereo mini jack, also located on the bottom).

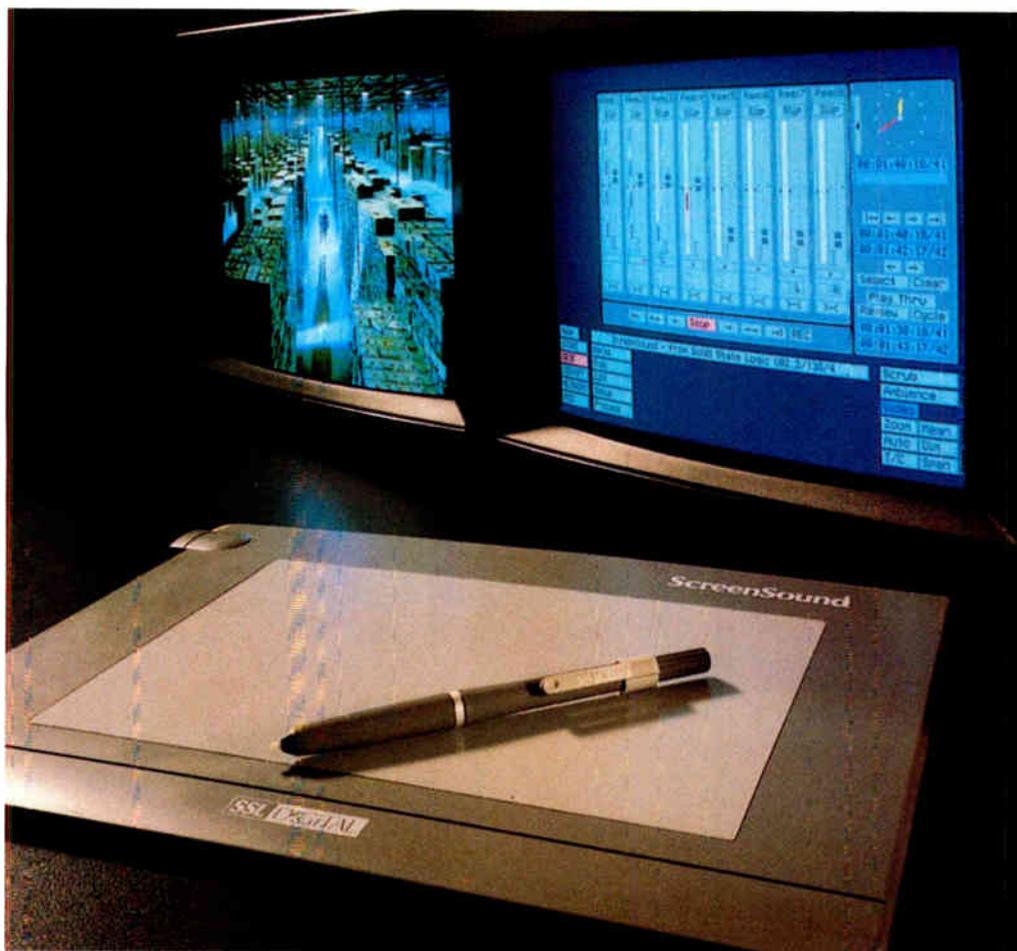
Also on the bottom are a light switch for the LCD, on-off switch, and Start ID and Search buttons. (Start IDs may be written either during recording or afterward.) A Hold switch, when activated, prevents accidental activation of the power switch, eject button or any other operating buttons—a convenient feature when you're using the TCD-D3 in the field.

The front panel display is easy to read under normal conditions, even without the light, and includes a wealth of information: left and right peak level meters; program number; an hours/minutes/seconds counter (selectable to absolute time, remaining time or program time); and status indicators for LP mode, Start ID, digital input, battery condition and more. One minor complaint is that the recorder must be removed from the carrying case in order to eject a cassette.

I was able to use the TCD-D3 under a variety of conditions, and it performed very well most of the time. Playback of a commercially available DAT tape was everything I could hope for. Whether via headphones or my studio system, the audio was clear and impressively dynamic. Next, I used the analog line inputs to archive some digital audio from the Digidesign Sound Tools system. Recording was uncomplicated, and the results were nearly undetectable from the original.

Then I charged up the battery pack (charging time is one hour) and ventured out to record a jazz quartet in a live venue. I used Sony's \$100 ECM-909 microphone (a compact electret condenser mic with a mini-plug output) and was amazed at the resulting fidelity and stereo imaging. However, anyone wishing to record remotely for extended lengths of time will want to

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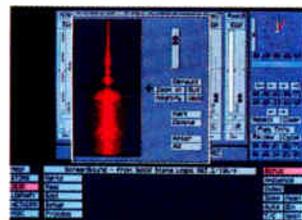
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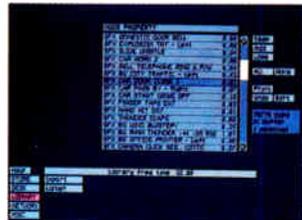
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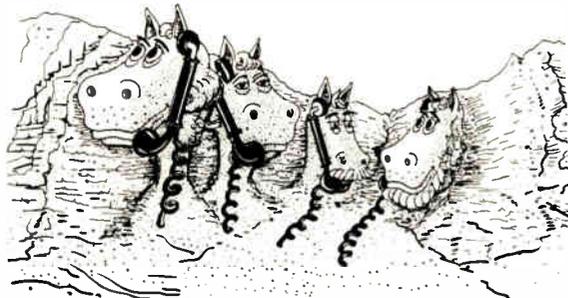
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carry extra battery packs. It's worth mentioning here that the headphone level may not be sufficient for monitoring in some live applications. I subsequently used this recorder/mic combination to record various sound effects (surf, racquetball sounds, competitive kites, etc.) with stunning results.

In using the TCD-D3 to record a mono soundtrack with time code information on the other track, I investigated its potential for crosstalk. A SMPTE signal was recorded at 0 dB via analog in on one track, and about 44dB leakage was seen on the other track.

As mentioned earlier, the TCD-D3 includes a special cable for optical digital recording. For recording via S/PDIF (coaxial) in, two options are available. The first is a RK-DA10 cable (\$60) with a weird little 7-pin connector that plugs into the TCD-D3 and an RCA plug (digital input only) on the other end. The second option is the (\$250) RM-TCD-D3K adapter kit, which offers both optical and coaxial I/O (incidentally, this is the *only* way of getting a S/PDIF output from the TCD-D3), along with a full-function wireless remote control. Since the instructions for the latter were entirely in Japanese, I prudently decided against unraveling the mysteries of the remote control on my own. But I did use the coaxial I/O to record and play back digitally from various sources.

Which brings us to the dreaded Serial Copy Management System (SCMS). The unit does indeed allow recording of one digital copy of any source material, using a Panasonic SV-3700 to digitally transfer material via the S/PDIF ports. Second-generation information going into the TCD-D3 simply caused it to enter record-pause mode. When the playback information on the 3700 subsequently went beyond the second-generation portion of the tape, the TCD-D3 automatically went out of pause and into record mode again. Hey, what do you want from a consumer unit?

The manual is good, the price (\$850) is good and availability is getting better. It's *very* portable and it sounds great. These and other features make the Sony TCD-D3 a useful tool for many pro audio applications.

Sony Corporation of America, Sony Drive, Park Ridge, NJ 07656; (201) 930-6432. ■

Recording Schools

Seminars and Programs



Following is a briefly annotated list of schools and programs offered in the areas of audio and music education, compiled from questionnaires received from those institutions earlier this year. The courses vary greatly in scope, intent and cost, and we urge those interested in attending any program to investigate very carefully before making their decisions. *Mix* claims no responsibility for the accuracy of the information provided by the institutions. PHOTO: BILL SCHWOB

Eastern Eastern Eastern Eastern Eastern

ALPHA WAVE RECORDING STUDIOS; Course/Program Title: Music Career Management Courses; 5042A West Chester Pike; Edgemont, PA 19028; (215) 353-9535. **Chief Administrator:** Ken Myers, John Mikity. **Program:** An intensive 25-week program that concentrates on three primary areas of study: 24-Track Recording Engineering, Computer Music Operations and Music Business Understanding. Class sizes are limited to five students per section to ensure maximum hands-on learning. Students will study all aspects of multitrack engineering, basic and advanced sequencing, programming and composing techniques. The Music Business Understanding course examines publishing, contract analysis, record and concert promotion, artist management, radio and airplay playlist interpretation, placing material and copyrighting. Classes are intensive, individualized learning experiences taught by professional engineers and industry representatives. The program is designed to increase your awareness in all aspects of the music business. Courses are conducted on a standard semester format with special summer sessions. Total tuition: \$2,500. Fee covers registration, textbooks, tapes, floppy disks and all studio incidentals. Call for brochure and curriculum outlines.

THE AMERICAN UNIVERSITY; Course/Program Title: Audio Technology; 4400 Massachusetts Ave. NW; Washington, DC 20016-8058; (202) 885-2743, (202) 885-6000. **Chief Administrator:** Romeo Segnan. **Program:** The American University Physics Department offers a Bachelor of Science degree in Audio Technology. It concentrates on technologies of electronic sound recording and production. It is multidisciplinary and utilizes other departments for courses in mass media, music, theater production, business and computer science. It is host to a developing program in Music and Technology, in collaboration with the Performing Arts and Computer Science departments. The program's faculty consists of three full-time and several adjunct professors providing individualized guidance for students. The adjuncts are drawn from the community of professional practitioners in the Washington area, many of whom are graduates of the program. The main studio has a 24x16x2 TAC Scorpion mixing console, Studer A80 Mark III tape deck, two Fevox 2-track mastering decks, dbx noise reduction throughout, and a full range of analog and digital signal processors. Our two electronic music labs have various analog and digital synthesizers, samplers, MIDI controllers, IBM, Mac and Atari computers, 8-4- and 2-track tape recorders, and mixing consoles. We also host a student chapter of the Audio Engineering Society. Program acceptance demands at least 2.0 GPA; unlike other programs, no audition is necessary.

AUDIO RECORDING TECHNOLOGY INSTITUTE; Course/Program Title: Theory & Practice of Audio Recording; 756 Main St.; Farmingdale, NY 11735; (516) 454-8999; (800) 543-ARTI (in NY or CA). **Chief Administrator:** James J. Bernard. **Program:** A comprehensive, hands-on course in the theory and practice of audio recording. The program consists of four levels: Basic Audio 101, Advanced Audio A201, Recording Workshop A301 and MIDI Technology M401. Each course is 10 weeks, 3 hours per week, and provides extensive experience with the studio equipment. Audio Recording Tech Inst. (ARTI) was established in 1969 and maintains very limited enrollment per class; it also offers affordable tuition with financing and realistic employment opportunities. Initially, qualifying graduates may use all ARTI studios for their own private sessions as a member of the Recording Engineers Association. This exclusive Association offers the graduate important, professional studio experience in preparation for eventual employment in the industry. Presently, ARTI has two school locations in Long Island, NY, a location in Anaheim, CA, and the newest location in Orlando, FL.

THE AUDIO WORKSHOP SCHOOL (DIV. COMMUNICATIONS RESEARCH GROUP); Course/Program Title: Studio and Stage Sound Production: SSP 300 + 400 Series; 119 Fresh Pond Pkwy.; Cambridge, MA 02138; (617) 547-3957; FAX: (617) 876-5159. **Chief Administrator:** Steve Langstaff. **Program:** New England's oldest audio school has been guiding aspiring engineers, producers and musicians since 1972. We offer comprehensive training in theory and techniques of sound engineering in collaboration with top 24/32/48-track Boston studios. Four-month program meets weekday evenings and weekends in classes that are small and personal. Program covers Acoustics, Hearing and Perception, Microphones, Analog and Digital Media and Processing, Mixing, Automation, MIDI, SMPTE, Studio and Location Production of Music, Commercials, and Audio Post for Film, Video, Vinyl and CD, Equipment Interface and Maintenance, Sound Reinforcement, Audio Business and Finance. It includes 24-track student projects. Harvard-educated instructor Steve Langstaff is a respected music and acoustical engineer, consultant and producer, and a member and former chairman of the New England section of the Audio Engineering Society. Noted guest instructors include Paul Lehman, Walter Lenk, Stuart Cody and John Kiehl. No prerequisites for SSP-301. Licensed by the Massachusetts Department of Education.



BELMONT UNIVERSITY
Nashville, TN

BELMONT UNIVERSITY; Course/Program Title: Music Business; 1900 Belmont Blvd.; Nashville, TN 37212; (615) 386-4504; (615) 385-6784. **Chief Administrator:** Robert E. Mulloy, director of Music Business. **Program:** Established in 1974. The program leads to a Bachelor of Business Administration (BBA), a professional degree. Students who complete the degree requirements graduate with a major in Music Business. The program stresses a strong liberal arts emphasis and is not a "trade school" program. Forty-six courses offered allow for electives to determine the industry direction of the student. The program discourages the "glamour and glitter" concept. A 24-track professional analog and digital recording studio is housed on the campus, with a second studio scheduled for completion this year. Both studios are available to Music Business majors. An industry intern program complements the academic work. An active Music Business Board of Advisors from the Nashville music industry serves as an advisory system for the program. The program stresses the real-world application to the academic classroom setting. Six full-time and 19 adjunct professors.

BERKLEE COLLEGE OF MUSIC; Course/Program Title: Music Production and Engineering; 1140 Boylston St.; Boston, MA 02215; (617) 266-1400. **Chief Administrator:** Lee Eliot Berk, president. **Program:** The Music Technology division offers four-year degree/diploma programs focusing on professional production, engineering, music synthesis skills and extensive, hands-on training. Courses include analog/digital audio, automated mixing, digital/video post-production, main-
—LISTING AND PHOTO/LOGO CONTINUED ON NEXT PAGE

Recording Schools

Seminars and Programs



—LISTING CONTINUED FROM PREVIOUS PAGE



BERKLEE COLLEGE OF MUSIC
Boston, MA

tenance, music business, sound reinforcement, MIDI/SMPTÉ synchronization systems, sampling, sequencing, sound design, and computer-based synthesis, processing and editing. Internship program is available. The Berklee facilities include seven fully equipped studios (three 24-track), digital/video post-production editing room, three synthesis labs with individual workstations, and MIDI-equipped ensemble/recital rooms. Our graduates are employed at A&M, BMG, CBS, GRP and PolyGram Records; Capitol, Conway, Criteria, Masterdisk, Hit Factory, Power Station, Record Plant and Unique studios; Korg, Kurzweil, New England Digital, Roland and Yamaha. Selected production projects are included in an annual CD release. We are proud to have received three consecutive TEC Awards.



CAREER INSTITUTES OF AMERICA
(MUSIC AND VIDEO TRAINING CENTER)
Miami Beach, FL

CAREER INSTITUTES OF AMERICA (MUSIC AND VIDEO TRAINING CENTER); Course/Program Title: Music/Video and Entertainment Management; 1205 Washington Ave.; Miami Beach, FL 33139; (305) 531-3300; (800) 762-4466. Chief Administrator: Merv Paul, president, former VP of CBS Records. Program: Comprehensive 15-month Specialized Associate Degree features hands-on training with 8- and 16-track Tascam, 24-track SSL 4040 mixing desk, Yamaha and JBL P.A., Otari, Tascam, Studer, Mitsubishi, digital and analog tape. Full MIDI facilities utilizing such equipment such as Proteus and Akai digital samplers. Video production facilities in-

clude a state-of-the-art studio and control room with offline and online post suites for A-B roll and special EFX with Video Toaster on Amiga graphics-based computer. To enhance our students' marketability within our industry, the course of instruction also includes professional development, marketing, business and legal classes. MVTC students are supervised by experienced industry professionals. MVTC is fully accredited by NATTS and offers federal financial aid programs for eligible students, student housing and employment assistance. Contact the office of admissions for information on requirements for acceptance.

CAYUGA COMMUNITY COLLEGE; Course/Program Title: Telecommunications: Radio & Television Broadcasting; 197 Franklin St.; Auburn, NY 13021-3099; (315) 255-1743. Chief Administrator: Steven Keeler.

COLLEGE OF ST. ROSE; Course/Program Title: BS in Music, concentration in Studio Music; 432 Western Ave.; Albany, NY 12203; (518) 454-5178. Chief Administrator: Mary Ann Nelson. Program: The College of Saint Rose's Studio Music program leads to a BS degree in music with a concentration in studio music. The studio music component focuses on strong musical performances, writing, arranging and improvisation, as well as studio production, recording technology and television production. Admission is by audition. Catalog and application information: CSR Admissions Office (518) 454-5150. Program Director: Mary A. Nelson (518) 454-5278.

COMMUNITY COLLEGE OF THE FINGER LAKES; Course/Program Title: Music Recording Program; Lincoln Hill; Canandaigua, NY 14424; (716) 394-3500. Chief Administrator: Frank Verget.

DUQUESNE UNIVERSITY—SCHOOL OF MUSIC; Course/Program Title: Bachelor of Music in Sound Recording Technology; 600 Forbes Ave.; Pittsburgh, PA 15282; (412) 434-6081. Chief Administrator: Dean Michael Kumer; Thomas J. Kikta Jr., dir. Rec. Arts. Program: Duquesne University's new four-year program fills a void in existing offerings elsewhere by combining the artistic and technical aspects of today's musical fields into a single, comprehensive package. In addition to their major instrument, students will gain exposure and hands-on expertise in such areas as electronics, recording theory, computerized music application, music production, acoustics, and studio design and management. At the same time, students will complete traditional elements of the music curriculum such as piano, theory, solfège, eurhythmics, composition, conducting, and music history and literature. All recording training takes place in Duquesne's new multitrack/synthesis facility. For additional information and equipment list, please contact the School of Music at (412) 434-6080.

DUTCHESS COMMUNITY COLLEGE; Course/Program Title: Communication and Media Arts; 53 Pendell Rd.; Poughkeepsie, NY 12601-1595; (914) 471-4500. Chief Administrator: Eric Somers. Program: Audio coursework is part of a larger audio/video production program leading to an AS degree. Facilities include 30x40 16-track recording studio, three radio production rooms, 40x60 television studio with high-end broadcast equipment. SMPTÉ editing, animation lab, etc. Open admissions policy. Scenic Hudson Valley location. Easy access by commuter train or car to NYC.



ELIZABETH CITY STATE UNIVERSITY
Elizabeth City, NC

ELIZABETH CITY STATE UNIVERSITY; Course/Program Title: BS Music Industry Studies w/Music Business Administration and Music Engineering & Technology; ECSU Department of Music; Elizabeth City, NC 27809; (919) 335-3359. Chief Administrator: Dr. Scott Fredrickson, Barry R. Hill. Program: As a rapidly expanding constituent of the University of North Carolina, Elizabeth City State University offers quality education within a small campus environment. Within the music degree programs, ECSU offers a BS in Music Industry Studies with concentrations in Music Business Administration and Music Engineering and Technology. The MBA curriculum focuses on music business, management, marketing, sales, publications, retailing and promotion. The MET curriculum in-

volves studies in studio recording and production, digital audio, MIDI, computer applications, acoustics and studio design. Our on-campus 24-track facility features a Trident console with Otari multitrack and mastering tape machines, DAT mastering and remote recording Macintosh computer systems, and a complete array of outboard gear and microphones by Lexicon, Orban, Neumann, AKG, etc. ECSU offers low in-state and out-of-state tuition (\$637/\$2,631 per semester) and is located within 60 miles of Norfolk, Virginia, and the North Carolina Outer Banks resort areas.



FIVE TOWNS COLLEGE
Seaford, NY

FIVE TOWNS COLLEGE; Course/Program Title: Audio Recording Department; 2165 Seaford Ave.; Seaford, NY 11783; (516) 783-8800. Chief Administrator: Dr. Marlin Cohen. Program: Five Towns College offers a two-year A.A.S. business degree or four-year Bachelor of Music degree, both with concentrations in Audio Recording Technology. A.A.S. program is centered around a core of sequential audio classes starting with acoustics and studio electronics, culminating in full-blown, student-produced and engineered 24-track projects. Audio classes are augmented by a solid business education including marketing, business law independent record production, accounting, business organization and management, and electives related to the music industry. B.M. degree expands the A.A.S. degree with classes in MIDI music theory, harmony composition, arrangement and performance. Audio classes are taught in the college's on-campus, fully equipped automatic recording studio and MIDI laboratories. Facility are active in New York metropolitan locale and hold album credits. Situated 30 minutes from N.Y.C., the college maintains a vigorous internship program with many of the area's "world class" studios. Scholarships, financial aid, housing available.

FRED VAIL MUSIC INDUSTRY SEMINARS, WORKSHOPS AND CONSULTING; Course/Program Title: Challenges of the Recording Industry in the '90s; Recording Studio Management; "Breaking Into Recording Arts and Performing"; 2808 Azalea Place; Nashville, TN 37204; (615) 297-0700; FAX: (615) 297-1413. Chief Administrator: Fred Vail, Bobby Ross. Program: A 35-year veteran of the broadcasting and music industries, Vail is an ideal choice for speaking engagements, recording studio workshops and seminars, motivational talks and private consultations. As president of Treasure Isle Recorders Inc., Nashville, and a former manager of the Beach Boys, Vail has spoken to numerous groups, organizations, colleges and universities throughout the United States, United Kingdom and Europe, including Vanderbilt University, Riverside College, California State University, Middle Tennessee State University, Belmont College, University of Alabama, N.A.C.A., American Defense Institute and the Ohio School of Broadcasting. Vail's career covers five decades and includes work with the Four Seasons, Jan and Dean, The Righteous Brothers, Alabama, Dolly Parton, James Taylor, The Byrds, Ricky Skaggs, Glen Campbell, Slaughter, Grand Funk, and B.B. King, among others. "Vail genuinely understands the concerns of struggling musicians and what is now required to break into the music business," Johnson City (Tennessee) Press. "... thanks for the best job." Stephen M. Bruce, NACA. "The most constructive advice we received in Nashville." "Up Country" Carry R. Saffer, Farmington, Maine.

FULL SAIL CENTER FOR THE RECORDING ARTS; Course/Program Title: Recording Arts Specialized Associates Degree and/or Video and Film Production Specialized Associates Degree; 3300 University Blvd.; Winter Park, FL 32792; (407) 679-0100; (800) 221-2747 (outside FL). Chief Administrator: Jon Phelps, Steve Phelps, Garry Jones. Program: Degree programs in audio and/or video and film cover the major aspects of their respective industries, including recording engineering, record production, post-production, the tapeless studio, digital recording, music video production, concert sound and lighting, MIDI music, music business, cinematography, set design and special effects. Over 2,700 contact hours of training are offered with more than 1,350 hours of hands-on labs utilizing equipment including Neve SSL and Sony consoles; Stu-

—LISTING AND PHOTO/LOGO CONTINUED ON NEXT PAGE

The 1991 TEC Awards Nominees

The 1991 Technical Excellence & Creativity Awards will be held Saturday, October 5, at the Grand Hyatt Hotel in New York City. For more information, contact Karen Dunn at (415) 562-7519.

Watch for your voting ballot in the August issue of *Mix!*

▼ OUTSTANDING INSTITUTIONAL ACHIEVEMENT

Acoustics/Studio Design Company

- Russ Berger Design Group Inc., Dallas, TX
- Perception Inc., Los Angeles, CA
- RPG Diffusor Systems Inc., Largo, MD
- Walters-Storyk Design Group, New Paltz, NY
- Waterland Design, Los Angeles, CA

Recording Studio

- A&M Studios, Hollywood, CA
- Conway Recording Studios, Hollywood, CA
- Ocean Way Recording, Hollywood, CA
- Right Track, New York, NY
- Skyline Studios, New York, NY

Sound Reinforcement Company

- Audio Analysts, Plattsburgh, NY
- Electrotec Productions Inc., Canoga Park, CA
- Maryland Sound Industries Inc., Baltimore, MD
- Showco Inc., Dallas, TX
- Ultra Sound, San Rafael, CA

Mastering Facility

- Artisan Sound Recorders, Hollywood, CA
- Bernie Grundman Mastering, Hollywood, CA
- Masterdisk Corp., New York, NY
- MasterMix, Nashville, TN
- Sterling Sound, New York, NY

Audio Post-Production Facility

- Advantage Audio Inc., Burbank, CA
- EFX Systems, Burbank, CA
- Post Logic Inc., Hollywood, CA
- Howard Schwartz Recording Inc., New York, NY
- Sync Sound Inc., New York, NY

Remote Recording Facility

- ASL Mobile Audio, Flushing, NY
- Effanel Music Inc., New York, NY
- Le Mobile, North Hollywood, CA
- Remote Recording Services Inc., Lahaska, PA
- Westwood One Companies, Culver City, CA

Recording School/Program

- Berklee College of Music, Boston, MA
- Full Sail Center for the Recording Arts, Winter Park, FL
- Institute of Audio Research, New York, NY
- Middle Tennessee State University, Murfreesboro, TN
- University of Miami, Coral Gables, FL

▼ OUTSTANDING CREATIVE ACHIEVEMENT

Recording Engineer

- Bob Clearmountain
- Frank Filipetti
- Roy Halee
- Roger Nichols
- Hugh Padgham

Remote/Broadcast Recording Engineer

- Bart Chiate/Gordon Klimuck
- Bob Clearmountain
- Randy Ezraty
- Ed Greene
- Dave Hewitt

Mastering Engineer

- Greg Fulginiti
- Bernie Grundman
- Ted Jensen
- George Marino
- Denny Purcell

Sound Reinforcement Engineer

- Dave Kob
- Dave Morgan
- Mike Ponczek
- M.L. Prociase
- David Scheirman

Audio Post-Production Engineer

- John Alberts
- Tom Davis
- Ken Hahn
- Gregg Landaker/Mike Minkler/Wylie Steteman
- Mel Zelniker

Record Producer

- Bruce Fairburn
- Patrick Leonard
- Scott Litt
- Hugh Padgham
- Nile Rodgers

▼ OUTSTANDING TECHNICAL ACHIEVEMENT

Signal Processing Technology

- Ameq Medici Equalizer
- Aphex Model 720 Dominator II
- Drawmer DL 241 Dual Auto Compressor
- Lexicon LXP-15
- Lexicon 300 Digital Effects System
- Zoom 9010

Recording Devices/Storage Technology

- Akai DD1000 Magneto-Optical Recorder
- AMS AudioFile Plus
- Panasonic SV-3700 DAT Recorder
- Sony PCM-7000 Series Studer D820-48 48-Channel DASH Digital Recorder
- 3M 996 Tape

Console Technology

- Crest/Gamble EX Monitor Console
- Euphonix Crescendo Audio Mixing System
- Harrison Series Ten B
- Mackie CR-1604
- Otari Premiere Console
- Soundcraft 3200

Musical Instrument Technology

- Alesis SR-16
- Akai S1100
- E-mu Proteus 2
- Ensoniq EPS-16 Plus Digital Sampling Workstation
- Korg Wavestation
- Roland S-770 Digital Sampler

Transducer Technology/Microphones

- AKG C-1000S
- AMS ST250 Stereo Microphone
- Beyer MC742
- Electro-Voice RE27 N/D
- Neumann TLM50
- Shure VP 88 Stereo MS Microphone

Transducer Technology/Loudspeakers

- Clair Bros. Audio 12AM Stage Monitor
- Electro-Voice MT-2
- JBL SR4700 Series Loudspeaker Systems
- KRK 703 Monitors
- Ramsa A-500/A550 Speakers
- Tannoy Monitor Series

Computer Software/Peripherals

- Digidesign DECK
- Digidesign Sample Cell
- Digidesign Sound Tools 2.0
- JL Cooper CS-1 Control Station
- Opcodes Studio Vision
- Techron TEF System 20

Ancillary Equipment

- Audio Precision Portable One
- Crown Macro Reference Amplifier
- Niche ACM Audio Control Module
- QSC EX 4000 Amplifier
- RPG Diffractal Diffusor

Sound Reinforcement Product of the Year

- ATI Paragon House Console
- Crest/Gamble EX Monitor Console
- JBL SR4700 Series Loudspeaker Systems
- Sabine FBX Feedback Exterminator
- Soundcraft Venue Console
- TC Electronic 6032/1128 Remote Equalizer

Recording Product of the Year

- Akai DD1000 Magneto-Optical Recorder
- Digidesign Sound Tools 2.0
- Lexicon 300 Digital Effects System
- Opcodes Studio Vision Software
- Panasonic SV-3700 DAT Recorder
- 3M 996 Tape

1991 HALL OF FAME INDUCTEES

- Ray Dolby
- Bill Putnam
- Bruce Swedien

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Recording Schools

Seminars and Programs



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Winter Park, FL

der, Otari and Ampex recorders; Synclavier and Direct-to-Disk digital recorders; CMX, Chyron, Grass Valley, Sony and Ikegami video gear. Programs offer optional six-week externships where students choose the facilities/locations whenever possible. Short courses are available. Full Sail is the winner of the 1989 and 1990 TEC Awards for Recording School/Program, the official training center for New England Digital and Neve, nationally accredited by NATTS, and capable of offering financial aid to those who qualify. Call and tell us about your career goals. We take your dreams seriously.

GEORGIA STATE UNIVERSITY; Course/Program Title: Music Industry Program; University Plaza; Atlanta, GA 30303; (404) 651-3513. Chief Administrator: Frederick J. Taylor. Program: The Department of Music Industry offers the Bachelor of Science degree with a major in Music Industry. Student may pursue a four-year program of study with a concentration in music business or engineering/production. The purpose of the program is to prepare students for entry positions in many areas of the music industry—such as record promoters, studio managers, copyright lawyers and recording engineers. Recording courses offer practical hands-on experience in analog and digital technology at a designated recording studio. Courses are also offered in MIDI and electronic music. The internship program places students at businesses such as record companies and studios throughout the nation. All instructors are active professionals in the music industry with a minimum of a master's degree. If interested, please call or write for additional information.

INSTITUTE OF AUDIO RESEARCH; Course/Program Title: Recording Engineering & Production (REP) Program; 64 University Pl.; New York, NY 10003; (800) 544-2501; (212) 777-8550 (NY, NJ, CT) Chief Administrator: Albert B. Grundy. Miriam Friedman, Program: Nominated for the 1991 TEC award, IAR offers the 650-hour Recording Engineering & Production (REP) Program. The REP Program provides both the in-depth technical knowledge and hands-on skills needed to begin a career in the recording industry as an assistant recording engineer or an entry-level audio technician. The program gives the student real, practical experience working on recording projects with professional bands in a state-of-the-art recording studio—from the initial tracking to the final mix—and a strong fundamental technical background. Special emphasis is placed on the cutting-edge of music technology, including MIDI (Musical Instrument Digital Interface), synthesizers, sequencers and sampling. IAR offers its students a unique training opportunity through its cooperative program with Solid State Logic. IAR students receive special training in signal flow and console operations on the SSL 6000 3 Series console. Advanced training is also available in both operations and

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INSTITUTE OF AUDIO RESEARCH
New York, NY

maintenance for working engineers. Students intern at world-famous New York recording studios like Power Station, The Hit Factory and Platinum Island, and lifetime graduate placement assistance is provided. IAR students work effectively in other audio settings as well, including audio for film, video and television, audio-for-video post-production, live sound, broadcast audio, satellite communication, corporate communications and other areas.

LEBANON VALLEY COLLEGE; College Ave.; Annville, PA 17003; (800) 223-6181 (PA); (800) 445-6181 (outside PA) Chief Administrator: John J. Uhl. Program: The Sound Recording Technology program at Lebanon Valley College is a comprehensive course of study combining the art, science and philosophy of recording. The students follow a variety of disciplines involved in the field of audio engineering, including: recording technology, music, physics, electronics, mathematics, computer science, business administration and selected courses in the liberal arts. Emphasis is placed on student usage of equipment in laboratory and level 500 courses. All applicants to the program must pass a musical audition for acceptance. The degree conferred is a Bachelor of Music: Sound Recording Technology and meets NASM standards.

LOYOLA UNIVERSITY; Course/Program Title: Recording & MIDI Synthesis; College of Music; New Orleans, LA 70118; (504) 865-2773. Chief Administrator: Sanford Hinderlie.



MEMPHIS STATE UNIVERSITY
Memphis, TN

MEMPHIS STATE UNIVERSITY; Course/Program Title: Commercial Music; CFA 232; Memphis, TN 38152; (901) 678-2559; FAX: (901) 678-5118. Chief Administrator: Larry Lipman. Program: Memphis State offers the Bachelor of Music in Commercial Music with concentrations in Recording Technology and Music Business. Fully accredited by NASM, CMUS majors won the prestigious 1990 NARAS Student Music Award in the Jazz/Big Band category. Our program stresses a thorough understanding of fundamental concepts, yet places equal emphasis upon developing the student's ability to quickly adapt to new practices, technologies and creative directions. Our instructors possess a broad knowledge of music industry practices and are actively involved in today's commercial music industry. Modern production facilities include a comprehensive 24-track studio, video production suite, electronic music lab, and Synclavier digital workstation. (See Southeast Studios Directory for complete equipment list.) The Memphis arts community offers a dynamic environment, providing students with diverse cultural opportunities and a rich assortment of internship possibilities. Scholarship funds are available for exceptional students, and many states offer financial assistance through the Academic Common Market. A commitment to personal attention and quality instruction requires that enrollment be limited and based on selective procedures.

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Fax: (206) 283-9744

MIAMI SUNSET SENIOR HIGH SCHOOL; Course/Program Title: TV Production/Electronic Music; 13125 SW 72nd St.; Miami, FL 33183; (305) 385-4255. **Chief Administrator:** Daniel B. Sell. Program: Sunset offers a three-year curriculum in television production and electronic music (recording engineering). Students in TV work in a four-camera color studio with computer-assisted editing, telecine and interformat dubbing. Students produce commercials, live close-circuit broadcasts and daily news, and record schoolwide events including four-camera remotes. Students involved in audio use the 8-channel Tascam/Tapco studio complete with dbx and many out-board accessories. Students also study sound reinforcement using our Yamaha P.A. system. Most projects include combining the TV, recording and sound reinforcement equipment. These programs are open to all full-time students in the school.



MIDDLE TENNESSEE STATE UNIVERSITY
Murfreesboro, TN

MIDDLE TENNESSEE STATE UNIVERSITY; Course/Program Title: Recording Industry Management Dept.; PO Box 21; Murfreesboro, TN 37132; (615) 898-2578. **Chief Administrator:** Christian Haselau. Program: Recording Industry Management (RIM) is a Bachelor of Science degree program covering both the business and production sides of the industry. RIM offers 25 different courses covering all areas of the industry, with minors available in Mass Communications, Electronics, Entertainment Technology, Music and Business Administration. Production students work in three on-campus digital audio recording studios. Facilities also include a 10-station MIDI lab, two digital audio workstations, video production and post-production studios and a remote recording truck. Ten full-time faculty are on campus to assist the 550-plus majors, who have come to Middle Tennessee State University from over 35 states. Current tuition, per semester full-time, \$673, in state; \$2,275, out of state; residents of certain Southern region states qualify for in-state status.

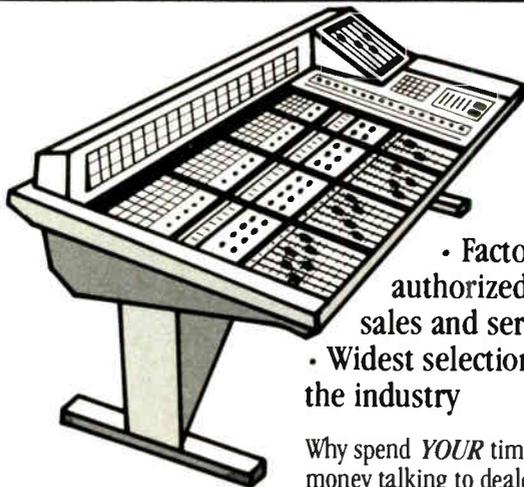
MUSIC BUSINESS SEMINARS LTD.; Course/Program Title: Doing Music & Nothing Else: The Music Business Weekend Seminar; 2 Roland Kimball Rd.; Freeport, ME 04032; (800) 448-3621; (207) 865-1128. **Chief Administrator:** Peter C. Knickles. Program: Celebrating its fifth anniversary, MBS Ltd., with sponsorship from Mix Bookshelf, presents "Doing Music & Nothing Else: The Music Business Seminar." The program is a one-weekend long, classroom style, multimedia educational experience presented in 16 major cities each year. The curriculum is designed for men and women of all ages, all styles of music, bands and soloists, who are pursuing a career in original songwriting, recording and/or performing. Learn how to establish appropriate goals, attract a songwriting or recording contract, book profitable gigs, raise capital and more. Aftercare Opportunities include toll-free telephone counseling with instructor, A&R Tip Sheet/Showcase program, two free directories (A&R and T-100), PAN membership, etc. Seminar is also available on eight audio tapes with workbook. This is the only music business seminar in the U.S. with a money-back guarantee. Call (800) 448-3621 for FREE cassette tape entitled "Your First Record Deal," 2-year complimentary quarterly journal subscription, and seminar brochure/schedule.

MUSIC FACTORY ENTERPRISES INC.; Course/Program Title: Audio Engineering Seminar; Ford & Washington Sts.; Norristown, PA 19401; (215) 277-9550. **Chief Administrator:** Jeffrey Calhoon.

NEW YORK UNIVERSITY; Course/Program Title: Music Business and Technology (MBT); Dept. of Music and Music Professions; 35 West 4th St., Room 777; New York, NY 10003; (212) 998-5432. **Chief Administrator:** Dr. Kenneth Peacock (tech.), Linda Beasley (business). Program: New York University offers specialized courses in Digital Sampling, MIDI, SMPTE, Advanced FM Synthesis, Computer Synthesis, Audio Engineering, Studio Production, Film Scoring and other newly evolving technologies. Four-year programs lead to Bachelor of Music degrees in music business and technology, composition, performance, jazz studies and music education. Graduate studies leading to MA, DA, Ed.D and PhD degrees are also of-

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Recording Schools

Seminars and Programs



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ferred. The NYU facilities are equipped with an array of analog and state-of-the-art digital synthesis systems, which are continually being upgraded. All studios are MIDI-equipped with the most common PCs, digital mastering to DAT, and the latest in professional music sequencing, notation and sound design software. The newly equipped advanced computer music facility utilizes a "MacII/Sound Tools" digital audio editing and sound design workstation. Five of the studios are linked to the university's mainframe computer network via a LAN using the studio PCs. This enables students to explore powerful programs like "C Sound" running under UNIX. The studios are also used for research in music education and music therapy.

JOSH NOLAND MUSIC STUDIO; Course/Program Title: Introduction to the Art of Recording; 760 W. Sample Rd.; Pompano Beach, FL 33064; (305) 943-9865. Chief Administrator: Josh Noland.

THE OMEGA STUDIOS' SCHOOL OF APPLIED RECORDING ARTS AND SCIENCES; Course/Program Title: Studio Techniques, Advertising Production, MIDI, Music Business; 5609 Fishers Ln.; Rockville, MD 20852; (301) 230-9100; FAX: (301) 230-9103. Chief Administrator: W. Robert Yesbek. Program: The Omega Studios' School, presently in its 14th year, offers a Basic Program (32 hours, \$595), an Inter-

mediate Program (32 hours, \$795), an Advanced Program (40 hours, \$995), an Advertising Production Program (24 hours, \$695), a Basic Electronic Music and MIDI Program (32 hours, \$795), an Advanced Electronic Music and MIDI program (40 hours, \$995) and a Music Business Program (24 hours, \$595). The courses include lectures and workshops covering acoustics; microphone, signal processor and tape machine theory; console operation (taught on SSL, API and Audiotronics consoles); computer sequencing; synthesizer operation and programming; audio-for-video; jingle production and voice-over techniques, direct-to-disc digital recording and editing; and music business. All engineering programs include extensive hands-on training in all four of Omega's control rooms and studios. Approved by Maryland Higher Education for veterans training, and certain courses are available for accreditation by The American University in Washington, D.C.

PEABODY INSTITUTE OF THE JOHNS HOPKINS UNIVERSITY; Course/Program Title: Bachelor of Recording Arts and Sciences; 1 East Mt. Vernon Pl.; Baltimore, MD 21202; (800) 368-2521. Chief Administrator: Alan P. Kefauver. Program: The Recording Arts and Sciences department of the Peabody Institute of The Johns Hopkins University offers a five-year program of training culminating in a Bachelor's of Music degree. The program combines the musical strengths of the world-famous Peabody Conservatory of Music with the technical expertise of the electrical engineering program at Johns Hopkins. Approximately ten students per year meet the qualifications for acceptance into this prestigious program that requires a musical audition and high math SATs. Students are trained in the Conservatory's automated analog/digital 24-track recording studio with a variety of music. From classical string quartets through high-intensity techno-popular styles, hands-on training and in-studio lectures are combined with the coursework in music and engineering to produce highly qualified recording engineer/producers whose technical abilities match their musical expertise. Scholarship aid is available, and all students are employed by the studio during their course of study.

PORKPIE PRODUCTIONS; Course/Program Title: How To Produce Great Radio Commercials—audio cassette training course; PO Box 176; Colchester, CT 06415-0176; (203) 225-5982. Chief Administrator: Brian Battles, author.

RECORDING SKILLS AND MUSIC BUSINESS WORKSHOP; Course/Program Title: Intensive Training Program for Sound Recording and the Business of Music; 8795 SW 57 St.; Cooper City, FL 33328-5930; (305) 434-1377. Chief Administrator: Dennis Hetzendorfer. Program: A high-quality,

intense recording skills and music business training program. Classes are taught by industry professionals and designed to meet the needs of the serious professional or novice. Recording classes are conducted in full-service 24-track studios, utilizing state-of-the-art equipment and techniques. Actual recording sessions with professional artists provide "hands on" experience and insight. Songwriting classes offer a unique opportunity for personal guidance and development. Instruction in music publishing and marketing your talents as a recording artist help to further one's knowledge of the business of music. Workshops are a la-carte style, with classes to suit all interests and backgrounds. Enrollment is limited, classes are small. It doesn't take a year of school or costly loans to gain the knowledge you need to be successful. Completion will fulfill all the requirements suggested by most recording studios for the position of assistant engineer.

SCHOOL OF MODERN RECORDING; Course/Program Title: Recording Techniques; 753 Capitol Ave., Media Arts Center; Hartford, CT 06106; (203) 951-8175. Chief Administrator: Jack Stang.



SONY PROFESSIONAL AUDIO TRAINING GROUP
Boca Raton, FL

SONY PROFESSIONAL AUDIO TRAINING GROUP; 6500 N. Congress Ave.; Boca Raton, FL 33487; (407) 998-9922; FAX: (407) 998-6700. Chief Administrator: Ray Callahan. Program: All courses are available as "factory" training sessions at our Boca Raton, FL, facility. Some courses are offered at our new facility located in San Jose, CA. The alternative to "factory" training is our custom on-site training package. The curriculum is two-fold: 1) Technical service training, which is designed to provide the service engineer with the knowledge required to service and maintain Sony Professional Audio products. A two-year electronics degree and one year of experience are the minimum requirements for this course type. 2) Applications classes designed to provide the student with the operational knowledge necessary to effectively operate specific Sony Professional Audio equipment. All courses stress hands-on time, enabling students to become confident with the operation and/or servicing of the specific equipment.

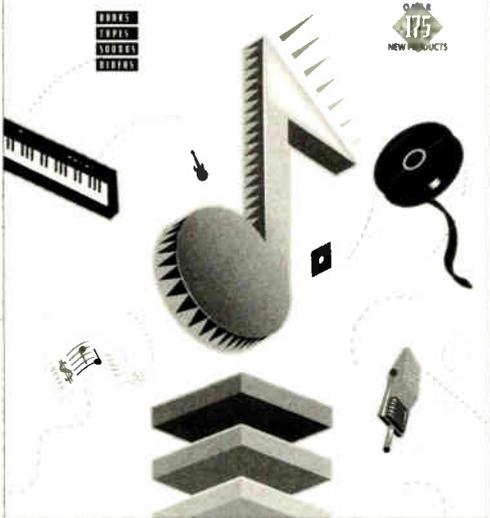
STATE UNIVERSITY OF NEW YORK AT FREDONIA; Course/Program Title: Bachelor of Science in Sound Recording Technology; SUNY Fredonia, School of Music; Fredonia, NY 14063; (716) 673-3221; (716) 672-3151. Chief Administrator: Ros Ritchie. Program: Applicant must satisfy the academic entrance requirements; an audition is required. Studies include liberal arts, music, physics, acoustics, electronics, recording basics, techniques and practices, practicum, and seminar. Studio and performance recording are required for lab sessions. Students graduating are required to have 650 hours of session/lab experience. Facilities include analog 1/4" 2-tr, 1/2" 4- and 8-tr, and 2" 24-tr recorders, and 2-channel digital recorders.

UNITY GAIN RECORDING INSTITUTE; Course/Program Title: Audio Recording Comprehensive Program; 2976-F Cleveland Ave.; Fort Myers, FL 33901; (813) 332-4246. Chief Administrator: Anthony Iannucci; Admin. Asst., Patricia Frangello. Program: Fort Myers' newest recording institute offers a 36-week program in Audio Recording. Classes are limited to five, providing each student with semi-private instruction. Our 108-hour program includes over 70 hours of "hands-on" time utilizing the institute's professional multitrack facility. The course comprises three levels: Introduction to Audio Engineering, Advanced Techniques in Audio Engineering and the Audio Recording Workshop. Throughout the course, each student participates in recording 14 different musical groups. Equipment used in lab includes: Soundtracs PC MIDI 24 console; Lexicon, Eventide, Korg, Aphex and dbx outboard gear; Mac SE, Professional Performer sequencer, Akai S950 sampler and Roland D-50 synthesis; AKG, Sennheiser, Electro-Voice, Neumann and Shure microphones. Upon completion of the course, each student receives a certificate of completion, a complete listing of all audio facilities nationwide and is provided with placement assistance in the area of his/her choice. For further information, or to receive a free catalog, please call or write.



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UNIVERSITY OF LOWELL; Course/Program Title: Sound Recording Technology; College of Music; Lowell, MA 01854; (508) 934-3850. Chief Administrator: Dr. William Moylan. Program: The University of Lowell offers three degree programs in Sound Recording Technology: the Bachelor of Music degree with a major in Sound Recording Technology and minors in SRT for Electrical Engineering and Computer Science majors. The program's facilities include: 24-track studio (automated and digital), video post-production and 8-track studio, sound synthesis and MIDI studio, beginning mixing, sound synthesis and editing studio. The major program, Bachelor of Music in Sound Recording Technology, is offered through the College of Music. The program produces musically sophisticated and sensitive professionals with sufficient technical knowledge to excel in the present production industry and to easily keep pace with the changing technology. The program combines studies in physics, electrical engineering, computer science and calculus with traditional studies in music and at least nine courses in the art and technology of recording. The University of Lowell's interns have been placed "from Tanglewood to Hollywood."

UNIVERSITY OF MIAMI; Course/Program Title: Music Engineering; School of Music; Coral Gables, FL 33124; (305) 284-2245. Chief Administrator: Ken Pohlmann. Program: The Music Engineering program at the University of Miami offers a four-year Bachelor of Music Engineering degree, with a minor in electrical engineering, as well as a two-year Master of Science Audio Engineering degree. Courses in undergraduate curriculum include recording engineering, digital audio, acoustics and studio design, studio maintenance, video production, computer programming, circuit theory, music business, music theory, arranging and performance. The graduate curriculum includes study in advanced digital audio, video, psychoacoustics, electrical engineering and a research thesis. Only students of the highest caliber are considered for admission to these programs. The principle recording studio houses an automated Sony MXP-3036 console, Sony APR-24 and APR-5002 recorders, Macintosh with Digidesign, Audio Kinetics synchronization system, Sony 3/4" video recorders, a Synclavier system and other equipment. Our recent graduates enjoy the highest placement rate in the professional audio industry, and have engineered gold, platinum and Grammy-winning albums.

UNIVERSITY OF NEW HAVEN; Course/Program Title: BA/BS in Music & Sound Recording; 300 Orange Ave.; West Haven, CT 06516; (203) 932-7101. Chief Administrator: Michael G. Kaloyanides. Program: The University of New Haven offers a Bachelor of Arts and a Bachelor of Science in Music and Sound Recording. Courses in the curriculum of both programs include 36-40 credits in Music history, theory, musicianship and performance, 38-43 credits in arts and sciences, and a minimum of 15 credits in sound recording methodology and techniques. The recording classes, which include Recording Fundamentals, Multitrack Recording I and II, and Recording Seminar I and II, cover such topics as acoustics, recording-related electronics, multitrack recording, equipment maintenance, sequencing, digital audio and MIDI. The Bachelor of Science program provides a stronger background in the science and technology of recording through courses in calculus, physics and electrical engineering. The new 24-track on-campus recording facility was designed to excel as both a teaching and professional recording environment and is equipped with a Tascam ATR80 24-track recorder, Allen & Heath consoles, UREI and JBL monitors and Crown power amps. Outboard gear includes products by E-mu, Alesis, Symetrix, Fostex, Yamaha, Roland, Valley People, BBE and DeltaLab. Microphones are by Sennheiser, AKG, Audio-Technica, Sony and Shure. Minors are available in Electrical Engineering, Communications, Computer Science, Management and Marketing.

UNIVERSITY OF NORTH ALABAMA; Course/Program Title: Bachelor of Arts/Science in Commercial Music; Box 5040, University of North Alabama; Florence, AL 35632-0001; (205) 760-4361. Chief Administrator: Dr. James K. Simpson. Program: General Studies: 44 to 55 semester hours. Music Core: Music Theory, 12 to 15 sem. hrs.; Music Literature & Music History, 9 sem. hrs.; Conducting, 2 sem. hrs.; Orchestration, 2 sem. hrs.; Musical Activities, 5 sem. hrs.; Class and/or Applied Music, 7 sem. hrs.; Music Electives, 4 sem. hrs. Prescribed Business Administration minor and supporting sources (24 semester hours): Accounting 291, 292 (6), Elementary Accounting, Business Law 280 (3), Business Law I, Management 330 (3), Principles of Management, Marketing 360 (3), Marketing 373 (3), Principles of Advertising, Math & Computer Science (6), Commercial Music (18 semester hours); Music Publishing (3), Record Company (3), Studio Techniques (3), Production (3), Commercial Music Practicum (3). Music Department is a member of the National Assoc. of Schools of Music. Survey of the Music Industry (3) is a new course we have added. Popular Songwriting (2) is an elective course.

UNIVERSITY OF NORTH CAROLINA-ASHEVILLE; Course/Program Title: Bachelor of Science in Music with Recording Arts; UNCA Department of Music; Asheville, NC 28804-3299; (704) 251-6432. Chief Administrator: Dr. Wayne J. Kirby. Program: Bachelor of Science in Music and Recording Arts or Bachelor of Arts in Music. Distinguished music faculty includes Dr. Robert Moog, the inventor of the Moog synthesizer. —LISTING AND PHOTO/LOGO CONTINUED TOP OF NEXT COLUMN



UNIVERSITY OF NORTH CAROLINA-ASHEVILLE
Asheville, NC

The BS degree program is designed for aspiring musicians interested in both the creative and technological aspects of music recording and production. This program includes practical experience in on-campus facilities, which house a multitrack recording studio, computer-based electronic music/digital synthesis laboratory, digital editing lab and maintenance/repair lab. Studies include MIDI, SMPTE, digital recording, sound reinforcement, synthesis, sound sampling, multitrack recording, acoustics and studio performance. Electives include: composition, jazz improvisation, arranging, music business and other profession-oriented courses. Minors are available in computer science, management, communications and theater. Internships are available to qualified students. In-state tuition and fees for one semester, approximately \$614; out-of-state, approximately \$2,805. Limited enrollment by audition.

WILLIAM PATERSON COLLEGE OF NEW JERSEY; Course/Program Title: Music Department/Audio Recording; Wayne, NJ 07470; (201) 595-2315. Chief Administrator: Dr. Stephen Marcone.

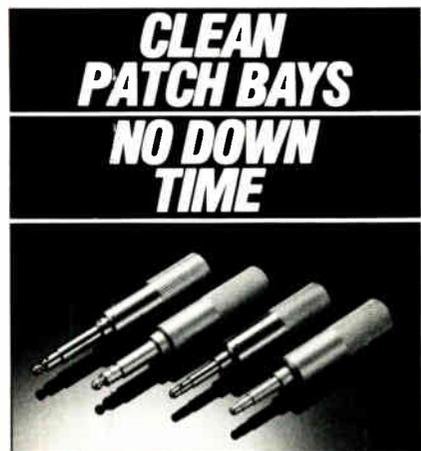
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AUSTIN COMMUNITY COLLEGE; Course/Program Title: Commercial Music Management Program; PO Box 140707; Austin, TX 78714; (512) 832-4806; (512) 832-4780. Chief Administrator: David Jones.

CAPITAL UNIVERSITY CONSERVATORY OF MUSIC; Course/Program Title: Music Industry; 2199 E. Main St.; Columbus, OH 43209; (614) 236-6411. Chief Administrator: Bob Breithaupt. Program: A Bachelor's degree (four-year program) with elective options in music merchandising and music media. Designed to provide undergraduates with a solid base of traditional and contemporary musical training. Music study is supplemented with studio recording techniques taught in conjunction with The Recording Workshop in Chillicothe, Ohio. This degree can be combined with a second major (business, communication, etc.) or a minor in one of the liberal arts areas.

CEDAR VALLEY COMMUNITY COLLEGE; Course/Program Title: Commercial Music Recording Technology; 3030 N. Dallas Ave.; Lancaster, TX 75134; (214) 372-8127. Chief Administrator: Helen Spencer, Ph.D. Program: Commercial Music Recording Technology (two-year associate degree). This two-year program is designed to provide the technical and musical skills necessary in the field of recording technology. Musical skills include vocal, instrumental and MIDI-based, computer-driven synthesis. Technical skills include electronic and acoustical theory, multitrack recording, automated mixing, session planning, session procedure, digital recording and troubleshooting.

THE CLEVELAND INSTITUTE OF MUSIC; Course/Program Title: Audio Recording degree program; 11021 East Blvd.; Cleveland, OH 44106; (216) 791-5000. Chief Administrator: Tom Knab, department head. Program: The Cleveland Institute of Music offers an intensive conservatory setting for learning audio/music production while pursuing a BM degree in Audio Recording. Courses cover audio system design and operation, digital audio, advanced microphone techniques, multitrack recording, signal processing, acoustics, maintenance, digital editing, audio-for-video and MIDI/synthesis. Internship, independent projects and four years professional experience in audio service round out the program. Classical music recording studies are conducted under the guidance of multiple Grammy winner Jack Renner of Telarc International. Acoustics studies are undertaken with Dr. Peter D'Antonio of RPG Diffusor Systems. The Institute offers excellent orchestras and top-quality musicians for collaboration. Musical and aural acuity as well as technical excellence are emphasized. Two well-equipped studios and limited enrollment allow for plenty of hands-on studio time and personalized instruction. Strong —LISTING CONTINUED ON NEXT PAGE



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Recording Schools

Seminars and Programs



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musical and academic requirements. Minor in Electrical Engineering available through Case Western Reserve University.

COLLIN COUNTY COMMUNITY COLLEGE; Course/Program Title: Commercial Music; 2800 East Spring Creek Pkwy.; Plano, TX 75074; (214) 881-5807. Chief Administrator: Michael Crawford.

COLUMBIA COLLEGE; Course/Program Title: Sound Engineering; 600 S. Michigan Ave.; Chicago, IL 60605; (312) 663-1600, ext. 354. Chief Administrator: Douglas R. Jones. Program: The Columbia College Sound Program is designed to educate tomorrow's professional sound person. Our curriculum includes classes in recording, video post-production, acoustics, sound contracting, system design, CAD, analysis using TEF, SYSid and Audio Precision, digital audio, psychoacoustics and more. All instructors in the program are experts in the audio community. The program has a strong emphasis on computers in audio on both the Macintosh and PC platforms. Students may earn a Bachelor of Arts degree or a two-year certificate.

ELMHURST COLLEGE; Course/Program Title: Music Business Program; 190 Prospect; Elmhurst, IL 60126; (708) 617-3515. Chief Administrator: Tim Hays. Program: Located in the Chicago metropolitan area, Elmhurst College is a nationally accredited institution that offers both a BS and a BM in music business. In addition to classwork in music, business and business of music, students get hands-on industry experience through internships, industry speakers and course tours to locations as diverse as Los Angeles, New York City and West Germany. Resources include a 16-track studio with digital mastering that has just come online in the college's new Computer Science and Technology Center, courses ranging from Music Theory to MIDI, recently expanded practice and recital facilities, and an artist faculty of over 30. Industry support is provided in the form of scholarships from trade organizations such as NAMM and NARAS, corporate sponsorship, a student chapter of MEIA and an intern/job bank. Offering students individualized instruction in music business for over 18 years, Elmhurst provides a specialized career track integrated within a four-year degree.

GREENVILLE COLLEGE; Course/Program Title: Contemporary Christian Music, Recording Emphasis; 315 East College; Greenville, IL 62246; (800) 345-4440; (800) 248-2288 (IL). Chief Administrator: Ralph Montgomery. Program: The Contemporary Christian Music program is a four-year degree program in which students may elect an emphasis in studio recording. Studio A is a 24-track MCI room with a JH-600 Series console, fully automated. The program covers acoustics, mixing consoles, automation, MIDI, SMPTE, live sound reinforcement and media writing and production. Engineers, producers and artists from the contemporary Christian music industry speak with students each month. For an emphasis in studio recording with a Christian liberal arts education, contact Greenville College.

HUTCHINSON TECHNICAL COLLEGE; Course/Program Title: Audio Technology; 2 Century Ave.; Hutchinson, MN 55350; (800) 222-4424; (612) 587-3636 (in MN). Chief Administrator: Dick Lennes, David Igl. Program: Two-year intensive technical audio program. Extensive hands-on training in audio electronics (analog and digital), studio and remote recording systems design and installation, acoustics, signal processing and sound reinforcement for pro sound market. Heavy on lab and practical applications. Personalized instruction allows students to enter throughout year, receive credit for previous experience and work at accelerated pace. Students active in AES, State school, low tuition. Graduates available throughout year. Extensive cooperation with employers for internships and supervised work experience. Our graduates have the mix of technical and production skills for today's pro sound market.

INDIANA UNIVERSITY; Course/Program Title: Associate of Science in Audio Technology/Bachelor of Science in Audio Recording; School of Music; Bloomington, IN 47405; (812)

855-1900. Chief Administrator: Dr. David A. Pickett. Program: The Associate of Science in Audio Technology, lasting approximately five semesters, offers training in audio recording, reinforcement and media production, with emphasis on classical music recording techniques and multitrack studio. The Bachelor of Science in Audio Recording is a four-year program that offers training in audio recording and reinforcement with emphasis on classical music engineering and producing. Applicants must demonstrate a keen interest in classical music and aptitude for core music studies. Performance not required. Students record all official concerts ranging from solo and chamber music through symphony orchestras, jazz ensembles and opera. In total, about 1,000 performances are produced annually in a 500-seat recital hall and the 1,460 seat Musical Arts Center. Classes in recording techniques, electronics, acoustics, maintenance and musical styles. Professional recording equipment includes 2-track digital with hard disk editing and 2, 4, 8 and 16-track analog. University financial aid and some work scholarships available. Departmental assistance offered in job placement.

INTERLOCHEN CENTER FOR THE ARTS; Course/Program Title: Recording Services Technical Internship; PO Box 199; Interlochen, MI 49643; (616) 276-9221. Chief Administrator: Cindy Warren, director of Human Resources. Program: Experience the "Magic of Interlochen"! We offer one-semester internships in recording services at our world-renowned Arts Academy, plus summer internships at our Fine Arts Camp. Duties include, but are not limited to, recording and/or sound reinforcement of concerts, lectures and seminars. Requires basic recording skills and the ability to work in teams. A good knowledge of classical/jazz music plus sound reinforcement skills very helpful. Accreditation is dependent upon school requirements. To become part of our exciting environment, call or write for an application.

LANSING COMMUNITY COLLEGE; Course/Program Title: Media Technology; 52-Media, PO Box 40010; Lansing, MI 48901-7210; (517) 483-1670. Chief Administrator: Dr. James C. Greene, program director. Program: The Media Department at Lansing Community College offers a variety of courses in Audio Production, Audio Recording and Sound Reinforcement. These courses are geared toward developing entry-level skills for students interested in these fields. The courses are progressive and offer a balance between theory and practice. Lab facilities offer modern analog and digital processing equipment. A two-year degree in Media Technology is available for students wishing to pursue an academic degree. The Media Department also offers courses in radio, video and photography (including film). Lansing Community College offers an open enrollment policy.

MCLENNAN COMMUNITY COLLEGE; Course/Program Title: Audio Technology/Commercial Music; 1400 College Dr.; Waco, TX 76708; (817) 750-3578. Chief Administrator: David Hibbard. Program: Broad-based program offering three degrees (A.A.S.) in Audio Technology, Songwriting/Composition, and Performance, with a new degree pending in Music Industry Management. Full-time faculty are all active professionals in the areas of recording, performance and composition. About 100 student majors with over 20 ensembles actively performing and recording music in all styles of contemporary and traditional music.

MICHIGAN STATE UNIVERSITY, DEPARTMENT OF TELECOMMUNICATION; Course/Program Title: Telecommunication; 409 Comm. Arts & Sciences Bldg.; East Lansing, MI 48824; (517) 355-8372 (dept. office); (517) 353-9753. Chief Administrator: Gary A. Reid. Program: An emphasis in audio production is available to students majoring in the Department of Telecommunication. Students must first complete a required sequence of core telecommunication courses. Upon completion of the core, students may go into various areas of specialization. The production specialization area consists of advanced courses in both audio and video production. The audio sequence is based around three courses with content ranging from basic, radio-oriented production, through full 24-track studio sessions. Emphasis is also placed on MIDI-based computer sequencing and SMPTE-based video sweetening. Independent study courses and internships are available to advanced students. A similar area is available for students specializing in video production. Students graduate with a BA in telecommunication. A master's level production program is also available. The facilities include 2/4/8/24-track audio studios interfaced with two video production studios.

MIDLAND COLLEGE; Course/Program Title: Commercial Music/Audio Technology; 3600 N. Garfield; Midland, TX 79705; (915) 685-4648. Chief Administrator: Robert Hunt.

NORTHEAST COMMUNITY COLLEGE; Course/Program Title: Audio and Recording Technology; 801 E. Benjamin; Norfolk, NE 68701; (402) 644-0506. Chief Administrator: Timothy Miller. Program: Northeast offers a two-year Associate of Art and/or Associate of Applied Science in Audio and Recording Technology. The Audio and Recording Technology program is a balanced mix of audio and electronic theory, concert lighting and sound reinforcement, music, MIDI, TEF™, studio techniques and hands-on experience with professional equipment and facilities. Northeast Community College is accredited by the North Central Association of Colleges and Schools and the Nebraska State Department of Education.

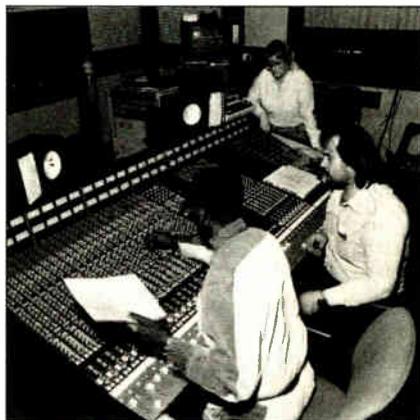
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NORTHEAST COMMUNITY COLLEGE
Norfolk, NE

OBERLIN CONSERVATORY OF MUSIC; Course/Program Title: Technology in Music and Related Arts (TIMARA), Oberlin College; Oberlin, OH 44074; (216) 775-8900. Chief Administrator: Conrad Cummings, Gary Nelson. Program: Completed in spring 1989, TIMARA's new electronic and computer music studios are among the best-equipped in the world, with technical resources that are often unavailable at the undergraduate level. This seven-studio complex holds equipment ranging from the earliest: analog synthesizers to the most recent digital synthesis technology. Some of the equipment includes recording decks by Otari, Ampex, Scully, Sony and Revox; Macintosh microcomputers; synthesizers by Moog, Buchla, ARP, Putney, Korg, Yamana, Ensoniq. The TIMARA program has two academic faculty members and a full-time music engineer. Through the TIMARA program, the Oberlin Conservatory of Music offers a Bachelor of Music degree with a major in electronic and computer music. Our courses stress musical and technical fundamentals and individual creative projects. Student work ranges from popular idioms through jazz to "avant-garde" music, with multimedia production and live performance encouraged.

OHIO UNIVERSITY; Course/Program Title: School of Telecommunications—Audio Production Sequence; 253 Radio-Television Bldg.; 9 South College St.; Athens, OH 45701-2979; (614) 593-4870. Chief Administrator: Jeff Fedefer. Program: The four-year program in Telecommunications leads to the Bachelor of Science degree in Communications. This is a broadly based liberal arts curriculum with an emphasis on media studies. The Audio Production Sequence incorporates coursework in multitrack recording, music production, media production, music, electronics, film, hearing and speech sciences, computer applications in music, as well as many other related courses. Audio courses stress technical theories, practical skills (with much hands-on training) as well as artistic considerations. Teaching facilities include stereo production and 8-track studios and a four-station audio editing studio. Other campus facilities include a Synclavier studio, film sound re-recording studio and a 16-track production studio with lock-to-picture. In addition to in-class experience, students gain experience through one of Ohio University's public radio or television stations and through an extensive internship program. Admission is highly competitive, and financial aid is available to qualified students.



RECORDING INSTITUTE OF DETROIT INC.
East Detroit, MI

RECORDING INSTITUTE OF DETROIT INC.; Course/Program Title: Recording Techniques; 14611 9 Mile Rd.; East Detroit, MI 48021; (313) 779-1380. Chief Administrator: Robert Dennis. Program: Established in 1976, The Recording Institute of Detroit offers an extensive, 336-clock-hour program in recording, MIDI and music technologies. The school offers

three 24-track studios and classroom facilities. Equipment includes Solid State Logic G Series, API and DDA consoles; Lexicon 480L, 224X plus 22 other delay/reverb units, including actual EMT plates; 12 tape machines including 24-track, digital and DAT units; 24 synthesizer/sound module/sampler units including EMI; sequencing on Amiga, IBM, Mac computers and Akai MPC 60; loads of additional outboard gear. Tascam 688 workstations for home recording training and MIDI programming. Recording classes meet once a week with 25 additional classroom hours for study, make-up and additional assistance at no charge. School publishes its own text and recording field magazine. Self-paced music theory classes featuring computer songwriting. Study skills training using Hubbard Study Technology that helps students self-learn equipment from manuals and more fully use new equipment. Job placement assistance and internships.



THE RECORDING WORKSHOP
Chillicothe, OH

THE RECORDING WORKSHOP; Course/Program Title: Recording Engineering and Music Production Program; 455-X Massieville Rd.; Chillicothe, OH 45601; (800) 848-9900; (614) 663-2510. Chief Administrator: Jim Rosebrook, director. Program: An intensive seven-week, 300-hour program designed to prepare entry-level recording personnel—the original “hands-on” school for students seeking concentrated training in the creative operation of professional recording equipment. Over 200 hours are spent in-studio. This experience includes session setup, miking techniques, recording, mixing, studio etiquette, song production, commercial and audio-for-video production, editing, and equipment maintenance. In lecture, students receive a broader study of audio engineering and music business practices. Our six-studio recording complex features two automated 24-track studios, two 16-track studios, an 8-track commercial/MIDI production studio, a hard disk digital editing/DAT mastering studio and a conventional editing lab. In-studio class size is three to six students, lecture class size is 48. We have internship and job placement services. We offer low-cost, on-campus housing. Financial aid is available. The Workshop has been a TEC Award nominee and is approved by State Board of Proprietary School Registration. Please call for a free brochure.

RED WING TECHNICAL COLLEGE; Course/Program Title: Electronic Music Technology; 215 Pioneer Rd.; Red Wing, MN 55066-3999; (800) 657-4849. Chief Administrator: Admissions Office.

SMITH/LEE PRODUCTIONS MEDIA SCHOOL; Course/Program Title: Basic Recording Techniques, Advanced Recording Techniques; 7420 Manchester Rd.; St. Louis, MO 63143; (314) 647-3900. Chief Administrator: David Smith. Program: Smith/Lee Productions is a professional 24-track studio offering Basic Recording Techniques and Advanced Recording Techniques. The Basic Recording Techniques course is designed to prepare students with the proper theoretical foundation in audio and magnetic recording, while providing key instruction in the operation of professional audio recording equipment. The Advanced Recording Techniques course provides continuing technical instruction and training, preparing the student to successfully tackle more complex production situations in sound recording, mixing, A/V production and audio-for-video. Smith/Lee Productions Inc. offers courses quarterly for eight weeks, meeting once a week. These courses are excellent training for students, professionals, musicians, record producers and recording artists.

SOUND ARTS RECORDING SCHOOL; Course/Program Title: 24-Track Audio Engineering; 2036 Paskett; Houston, TX 77092; (713) 688-8067. Chief Administrator: Jeff Wells.

SOUND & VIDEO CONTRACTOR; Course/Program Title: Technical Fundamentals of Audio; PO Box 12901; Overland Park, KS 66212; (913) 888-4664. Chief Administrator: Dennis Milan, publisher. Program: Sound & Video Contractor magazine, in conjunction with more than 80 of the most respected audio equipment manufacturers, acoustical consultants and systems contractors, is sponsoring the S&VC Continuing Education Program—“Technical Fundamentals of Au-

dio.” This program is designed for those who want to succeed professionally by providing attendees with the technical resources to solve real problems. It features two days of intensive instruction at the heart of audio technology. And every student comes away with a completely new textbook, calculator and useful skills. Location and dates are New York City—July 19-20, 1991; Chicago, IL—August 2-3, 1991; Los Angeles, CA—August 16-17, 1991; San Francisco, CA—August 23-24, 1991. To find out more about this exciting educational opportunity, phone (405) 340-3932, fax (405) 340-4936 or write Jenny Staton, Registrar, PO Box 481, Edmond, OK 73083. Join the winners: Invest in your future today.

SOUTH PLAINS COLLEGE; Course/Program Title: Sound Technology, Performing Arts Production Technology; 1401 S. College Ave.; Levelland, TX 79336; (806) 894-9611. Chief Administrator: John Hartin. Program: Performing Arts Production Technology program trains you to work as a production manager or technician of video production houses, entertainment and convention facilities, civic centers and theaters. Program provides training in video and audio production, lighting, stage crafts and business management. Training facilities include Grass Valley switcher, A/B roll editor, Dubner character generator, Ampex ADO, Sony 3/4" SP tape recorders, Sony CCD cameras and computer-controlled Strand

Century lighting system. Two-year program awards Associate of Applied Science degree. Contact: Pat McCutchin. The Sound Technology program trains you for a career as a recording engineer, sound reinforcement specialist, and studio or broadcast audio technician. Training facilities include the Tom T. Hall studio with 36-channel Sony automated console, 24-track analog recording, and synchronization to video. The Waylon Jennings Studio, with MCI 24-track recorder and console, and adjoining MIDI/synth studio, along with newly completed demo studio, electronics lab and rehearsal rooms complete the facilities. A multitrack digital recorder and Studer Dycast workstation are the newest additions to the center. Contact: Randy Ellis.

SOUTHERN OHIO COLLEGE; Course/Program Title: Audio Video Production; 1055 Laidlaw Ave.; Cincinnati, OH 45237; (513) 242-3791. Chief Administrator: Mark R. Turner, department chairperson. Program: The Audio Video Production Department features four recording studios, two multitrack. Instruction includes: audio sweetening, ADR, Foley, digital audio editing, miking techniques for voice and instruments, location audio and audio-for-video. Video instruction includes: studio and location production, computerized A/B roll editing, 2-D and 3-D computer graphics and animation, chroma

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Recording Schools

Seminars and Programs



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key, lighting and set design. Facilities include: three edit rooms, three graphic workstations, four EFP packages and a 40x25 studio. Southern Ohio College offers an Associate Degree and is accredited by the North Central Association of Colleges and Schools and the Association of Independent Colleges and Schools.

TEXARKANA COLLEGE RECORDING AND MIDI STUDIOS; 2500 N. Robison Rd.; Texarkana, TX 75501; (214) 838-4541 x257/x360. Chief Administrator: Dr. Murry Alewine. Program: Two-year associate degree in commercial music; classes in MIDI, arranging, printing and the recording studio. A state-sponsored college with two 16-track studios. Each 16-track studio has complete facilities with modern, up-to-date equipment. Professional-quality equipment with professional faculty. Classes begin each September, January and June. Fees/tuition schedule available on request. Hands-on instruction and lab time for all students beginning first semester. Fourth-semester students have access to professional 24-track studio in city. Many clubs, lounges, restaurants available in vicinity for employment. MIDI studio available. Three courses (Elementary/Intermediate/Advanced) in MIDI instruction. New program: Music Printing—two semesters. Macintosh SE30 with 80MB hard disk, laser printer NTXII, Finale by Coda and Music Publisher graphic notes.



UNIVERSITY OF MISSOURI-KANSAS CITY
Kansas City, MO

UNIVERSITY OF MISSOURI-KANSAS CITY; Course/Program Title: Conservatory Recording and Theatre Sound Design; Center for the Performing Arts; 4949 Cherry; Kansas City, MO 64110; (816) 235-2964. Chief Administrator: Tom Mardikes. Program: Two sound-related programs are offered at the University of Missouri-Kansas City. The Conservatory of Music offers a series of Audio Recording classes designed to teach undergraduate students the fundamentals of recording and music production, both in multitrack studio techniques and concert recording. Courses are also offered in Electronic Music production and composition. The Conservatory maintains two concert hall studios, one multitrack production studio and two digital synthesis studios. The Department of Theatre offers a graduate MFA program in Sound Design where the successful graduate is prepared for working in all theater applications: small studio, main-stage drama, musicals and opera. The graduate will also be able to work as an audio production engineer in all sorts of recording studio applications. By completing the course curriculum required for the Design and Technology Program, the sound designer learns technical skills from all departments of theater production. Both programs are housed in the Center for the Performing Arts, which is also home to the Missouri Repertory Theatre.

UNIVERSITY OF WISCONSIN-OSHKOSH; Course/Program Title: Music Merchandising—Recording Technology Emphasis; 800 Algoma Blvd.; Oshkosh, WI 54901; (414) 424-

4224. Chief Administrator: John Minniear. Program: The recording technology emphasis is an option of the music merchandising program, one of the majors offered by the Department of Music of UW-Oshkosh. This is a four-year program covering all aspects of the recording process: miking to mixdown, production and contractual agreements. The final semester is spent in the field as an intern at a professional recording studio. The program offers 16-track recording automation, MIDI room with time code and a full array of outboard gear. Recording tech students at UW-Oshkosh have won two of the ten NARAS Student Music Awards given in 1990 and 1991. The Department of Music at UW-Oshkosh is accredited by NASM. Early application for admission to the University is advised. Classes begin after Labor Day.

WEBSTER UNIVERSITY; Course/Program Title: Audio Production; 470 E. Lockwood; St. Louis, MO 63119; (314) 968-6924 (Media Office); Hufker-ext. 7654, Silverblatt-ext. 6925. Chief Administrator: Art Silverblatt, chairman; Barry Hufker, instructor. Program: Webster University is a SPARS Associate member offering a four-year program for students interested in music recording, audio-for-video/film and radio/television broadcasting. The flexible design of Webster's undergraduate program enables individuals to pursue defined career goals within the context of a liberal arts curriculum. Hands-on production is emphasized. Students completing the program and passing faculty-judged portfolio reviews will receive a B.A. degree in Media Communications with an "Audio Production Emphasis." Audio classes meet and assignments are completed in the University's three audio studios, which include a 16-track recording studio/control room and broadcast studio for WEBU-AM school's carrier current radio station. Students may also study at Webster's four European campuses.

WESTERN MICHIGAN UNIVERSITY (WESTERN SOUND STUDIOS); School of Music; Kalamazoo, MI 49008; (616) 387-4720. Chief Administrator: John Campos, director. Program: Western Sound Studios is a 24-track studio located in the school of music at W.M.U. The studio offers a unique opportunity for the student who wishes to gain hands-on multitrack recording and mixing experience without being committed to a major or minor in audio. Unlike other schools, where courses in audio are open only to students in a particular program, students in any curriculum at W.M.U. (i.e., music, business, EE, communications) may take our courses. Two courses are currently offered, with independent studies available thereafter for those who wish to gain further experience. Our students benefit from the flexibility that comes from using a studio that is not overrun with audio engineering majors. The quality of the students' work has been recognized with a collegiate Grammy Award in 1990 in the Pop/Contemporary category and numerous Downbeat awards.

Western Western Western Western Western

A RICHMAN PIANO/SYNTH TRAINING; Course/Program Title: Sight-reading, Speed Technique, Injury Retraining, Relaxation; 15840 Ventura Blvd., Ste. 844-G; Encino, CA 91436; (818) 344-3306. Chief Administrator: Howard Richman.

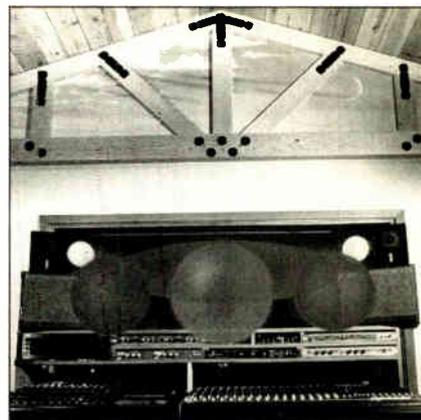
A.J.S. MEDIA CONSULTANTS; Course/Program Title: Video/Audio Quality Control for the Digital Format; 7038 De-Celis Pl., Ste. 9; Van Nuys, CA 91406; (818) 782-4741. Chief Administrator: Allan J. Schollnick.

ASPEN MUSIC FESTIVAL AND SCHOOL; Course/Program Title: Edgar Stanton Audio Recording Institute; 250 W. 54th St., 10th Fl. East; New York, NY 10019-5597; (212) 581-2196. Chief Administrator: John Hill.

BRIGHAM YOUNG UNIVERSITY; Course/Program Title: Sound Recording Technology; Dept. of Music, 20A KMB; Brigham Young University; Provo, UT 84602; (801) 378-6395. Chief Administrator: Ron Simpson.

CALIFORNIA POLYTECHNIC STATE UNIVERSITY; Course/Program Title: Music Technology Program within Music Major; Music Dept.; Cal Poly State University; San Luis Obispo, CA 93407; (805) 756-2406. Chief Administrator: Dr. Antonio G. Barata. Program: Cal Poly offers a BA in Music with a strong commitment to developments specific to American and 20th century music. The Music Department provides a broad and well-rounded series of courses in the theory, history, performance and technology essential to music-making. Courses in recording and electronic music are available to enhance an individual's music program for possible careers in radio, production, live concert recording, music business, sound design, and electroacoustic composition. The Music Technology program expands an individual's interests from a strong foundation in music. Typical courses are Music Synthesis, Advanced Synthesis, Music Recording Technology I and II, and Special Problems.

CALIFORNIA RECORDING INSTITUTE; Course/Program Title: Recording Arts and Technology; PO Box 2693; Santa Cruz, CA 95063-2693; (408) 722-4658. Chief Administrator: David A. Gibson. Program: One-year program, semester comprehensive courses, six-week classes and weekend seminars at two campuses. Classes in The Art of Recording/Mixing, the Structure of Mixes, Running Sessions, MIDI and Computers in the Studio, Sound Reinforcement, Synthesizers/Drum Ma-



CALIFORNIA RECORDING INSTITUTE
Santa Cruz, CA

chines, Equipment Maintenance, The Music Business, Television Production, Computer Editing and Audio-for-Video. Facilities include a variety of multitracks and mixing boards with various automation systems, an impressive selection of processing and effects, MIDI studios with SMPTE sync, a wide range of synthesizers/drum machines and complete video post-production. Labs are always open for extensive hands-on mixing time. By enrolling in one campus, you may attend classes at the other campus, which lets you gain a perspective on a wide range of types of equipment, maximize extra studio time and repeat or make up classes! Serious internship programs and job placement assistance. Call or write for free brochure. Campuses: 3D Sound Recording Studio, 3641 D Soquel Dr., Soquel, CA (Santa Cruz) and Sonic Images 24-track automated audio/video studio, 2217 The Alameda, Santa Clara (San Jose).



CALIFORNIA STATE UNIVERSITY, CHICO
Chico, CA

CALIFORNIA STATE UNIVERSITY, CHICO; Course/Program Title: Recording Arts (BA and minor); Department of Music; Chico, CA 95929; (916) 898-5152. Chief Administrator: Raymond Barker, Keith Seppanen, Daniel Craik. Program: The Department of Music at California State University, Chico, offers two programs in recording arts: the Bachelor of Arts in Music with an option in Recording Arts, and the Minor in Recording Arts. These programs are being offered in newly constructed facilities in the west wing of the Performing Arts Center. These facilities include a 24-track control room, a performance studio and an electronic music studio. A music major in the Recording Arts option will take courses in music history, music theory, composition with electronic media, audio recording, audio-for-video and the music industry, along with courses from other departments in electronics and physics of sound. The option in Recording Arts for music majors includes a capstone "internship" course that will provide the opportunity to record the major productions on this campus and to acquire experience in selected recording studios off campus. Call or write for information packets.

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS; Course/Program Title: Audio Recording and Music Synthesis (A.R.V.S.); 1000 Victoria St.; Carson, CA 90747; (213) 516-3543. Chief Administrator: David Champion. John Hill, David Bradford, etc. Program: CSU, Dominguez Hills, offers four-year BA music degrees in Audio Recording and Music Synthesis and a certificate program in Audio Technology. The curriculum includes lecture and hands-on lab courses in audio engineering, music synthesis, music production studio electronics and equipment maintenance. Elective studies in video production are available. Recording labs are conducted in an automated 24-track facility that includes a Soundcraft 2400 console, Sony/



CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS
Carson, CA

MCI JH-24 with Dolby SR digital and analog 2-track machines for mixdown, and an assortment of state-of-the-art microphone and signal processors. The adjoining MIDI studio (with SMPTE lock) is configured around an 8Mi Emulator III system. Students use an extensive software library for music sequencing, patch editing/storage, music printing, algorithmic composition, and visual sample editing on the Macintosh and Atari ST computers. Expander synthesizer modules include products by Yamaha, Roland, Oberheim, Casio, Alesis and Korg.



College for Recording Arts

COLLEGE FOR RECORDING ARTS
San Francisco, CA

COLLEGE FOR RECORDING ARTS; Bi-Cultural Foundation Inc.; 665 Harrison St.; San Francisco, CA 94107; (415) 781-6306. Chief Administrator: Leo De Gar Kalka. Program: One-year course for recording engineers and others intent on a career in the music/recording industry. C.R.A. is accredited by the National Association of Trade and Technical Schools (NATTS), approved for veteran training and authorized under federal law to enroll non-immigrant alien students. Semesters start the first full week of June, October or February. Over 15 years of providing quality graduates to the music/recording industry.

COLORADO INSTITUTE OF ART; Course/Program Title: Music and Video Business; 200 E. 9th Ave.; Denver, CO 80203; (303) 837-0825. Chief Administrator: Cheryl Murphy, president.

CONSERVATORY OF Recording Arts & Sciences

CONSERVATORY OF RECORDING ARTS & SCIENCES
Phoenix, AZ

CONSERVATORY OF RECORDING ARTS & SCIENCES; Course/Program Title: Master Recording Program; 1110 E. Missouri, Ste. 400; Phoenix, AZ 85014; (800) 562-6383; (602) 493-9898. Chief Administrator: Jacqueline F. Vican. Program: Professional career training in audio recording and production. The Conservatory offers the Master Recording Program, an intensive, 600-hour, 22-week course including Audio Recording and Production, MIDI/Computer/Electronic Recording, Music Business, Sound Reinforcement and Troubleshooting. Emphasis is hands-on instruction in a 24-track studio, a MIDI studio and on the SSL console. Individual projects required. Applicants judged on aptitude and attitude. Classes limited in size to eight or nine students. Internships available in commercial facilities around the country. Director of Education is Gold Album-winning engineer and a current working professional in the recording industry. Master Program awards a diploma and enrolls three times per year: winter, spring/summer, fall. Foreign students eligible. NATTS accredited. VA approved. Financial aid available for those who qualify.

FIRST LIGHT VIDEO PUBLISHING; Course/Program Title: Instructional Videos on Sound Recording; 8536 Venice Blvd.; Los Angeles, CA 90034; (800) 777-1576. Chief Administrator: Rosemary Guthrie.

FULLERTON COLLEGE; Course/Program Title: Music Recording/Production; 321 E. Chapman Ave., Music Dept.; Fullerton, CA 92634; (714) 992-7296. Chief Administrator: Alex Cina. Program: 1985 Mix TEC Award nominee. The college offers a one-year certificate in Music Recording/Production encompassing two semesters of audio recording, two semesters of electronic music, one semester of music business and other relevant music courses. The Music Dept. has a fully equipped 24-track studio w/automated board, digital reverb, digital mixdown and the usual complement of signal processors (harmonizer, compressors, etc.) and microphones. Fullerton College is a public California community college with minimal tuition for California residents. A great way to receive a college education and learn professional audio recording.



GOLDEN WEST COMMUNITY COLLEGE
Huntington Beach, CA

GOLDEN WEST COMMUNITY COLLEGE; Course/Program Title: Music Business and Technology; Recording Arts; 15744 Golden West St.; Huntington Beach, CA 92647; (714) 895-8780. Chief Administrator: David Anthony, Scott Steidinger, Evan Williams. Program: A well-developed international reputation has brought students from around the world to this "model" program. The program is unique in the generous amount of hands-on time and experiences available in the three well-equipped studios and four workstation/labs. Studio A features: MCI 24-track recorder, 40-channel Neotek Elite automated console, Q-Lock synchronizer, Lexicon 224XL reverb, digital recording plus extensive outboard signal processing. Studio B features: Neve 16-channel mixer, MCI 16-track recorder, digital recording and editing, plus analog and digital signal processing. Studio C features: a mixing capacity of over 60 inputs, 16-track recorder, extensive signal processing and an array of over 60 MIDI-sequenced synthesizer channels (Yamaha TF modules, Kurzweil 250, Roland S-550 sampler, Roland D-110, Proteus, Yamaha controller keyboard, drum machines, plus much more!) controlled by a Macintosh computer system and various software programs. A leader in music technology since 1972.

GROVE SCHOOL OF MUSIC; Course/Program Title: Recording and Engineering Program; 14539 Sylvan St.; Van Nuys, CA 91411; (818) 904-9400. Chief Administrator: Duke Gore/Jerry Gates. Program: Grove School of Music's one-year Recording Engineering Program is based on a four-part philosophy: learn how to operate the technology of today; have a fundamental music background; explore the variety of positions available in the audio field; and prepare students to obtain that first real-world, entry-level job. Grove students have the unique opportunity to work with students from the other ten programs offered at the Grove School. Students get a chance to record all styles of music in our four recording studios, including rock. —LISTING AND PHOTO/LOGO CONTINUED TOP OF NEXT COLUMN



GROVE SCHOOL OF MUSIC
Van Nuys, CA

jazz, big band, fusion, Latin and 45-piece orchestras. Film scoring, MIDI sequencing, overdubbing and automated mixing are just some of the areas covered at the Grove School of Music. These goals are achieved using Grove's in-house studios for hands-on experience with professional and student recording sessions and with in-depth classes on recording techniques and music theory taught by a faculty of Los Angeles' working professionals.

LONG BEACH CITY COLLEGE; 4901 E. Carson St.; Long Beach, CA 90808; (213) 420-4309; (213) 420-4517. Chief Administrator: Priscilla Remeta, Dr. George Shaw. Program: Facilities include 24-track, 16-track (TEAC and Fostex), 8-track and 4-track studios. A state-of-the-art MIDI classroom comprises 21 individual computer-controlled songwriting stations. Each station is equipped with a Macintosh, synthesizers, drum machines, effects and recording equipment. Commercial music instructors are all professionals in the music recording and performance fields. Students are given hands-on training and receive certificates in record producer, recording engineer, songwriter/arranger, copyist, vocal, instrumental including MIDI applications.

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LOS ANGELES RECORDING WORKSHOP
Studio City, CA

LOS ANGELES RECORDING WORKSHOP; Course/Program Title: 200-hour Recording Engineering Program, 300-hour 1st Engineer Program; 12268-X Ventura Blvd.; Studio City, CA 91604; (818) 763-7400. **Chief Administrator:** Christopher Knight. **Program:** The Los Angeles Recording Workshop offers 200-hour and 300-hour programs in RECORDING ENGINEERING. These are intensive, hands-on training programs designed specifically to train students for jobs in the recording industry. Job placement assistance is included. Our students train in FOUR studios on premises and THREE outside studios. The programs include training in Session Procedures, Miking Technique, Outboard Gear, Console Operation, Live Engineering, Audio-for-Video Post-Production, Digital Mastering and Hard-Disk Digital editing. Full-time (5-week or 10-week) and part-time (10-week and 15-week) schedules are available. We are fully accredited by ACCET, and financial aid is available to qualified students. Dorm-style housing is available. Call or write for our full-color brochure.



LOS MEDANOS COLLEGE
Pittsburg, CA

LOS MEDANOS COLLEGE; Course/Program Title: Recording Arts; 2700 E. Leland Rd.; Pittsburg, CA 94565; (415) 439-0200. **Chief Administrator:** Frank Dornie. **Program:** Los Medanos College in Pittsburg, California, offers a degree program in Recording Arts, including courses in multitrack recording, sound reinforcement, acoustics, MIDI sound synthesis, producing and troubleshooting. Theory, hands-on exper-

ence, a state-of-the-art recording studio and a faculty honored with ten Grammy nominations make the Los Medanos Recording Arts program the finest in Northern California. Fees: California residents \$5 per unit (\$50 max. per semester), out-of-state \$92 per unit.

LOYOLA MARYMOUNT UNIVERSITY; Course/Program Title: Recording Arts; Communication Arts Dept.; Loyola Blvd. at W. 80th St.; Los Angeles, CA 90045; (213) 338-3033. **Chief Administrator:** Donald J. Zirpola, chair; John Michael Weaver, program coord. **Program:** LMU Recording Arts is a four-year program that offers students the opportunity to explore both the aesthetic and technical challenges of sound design and recording, through in-depth study and hands-on experience. Emphasis is placed on both the art of music recording and the creative use of sound in film and television. Students take classes in mass communications, the art of cinema, screenwriting, film and television production, sound design, recording technology, acoustics, production and post-production sound, recording practices and techniques, contemporary issues, advanced recording and related music courses. Among LMU's recording facilities are a 16mm film re-recording studio, a video-assisted film and television post-production suite, and a 24-track recording studio containing equipment from AKG, Ampex, JBL, Lexicon, Neumann, Orban, Otari, Sennheiser, Sony, Trident and UREI. Classes are kept small to ensure that the needs of the individual student can be met.

MAY TECHNICAL COLLEGE; Course/Program Title: Recording Engineer and Radio/Television Broadcasting; 1306 Central Ave.; Billings, MT 59102; (406) 259-7000. **Chief Administrator:** Michael May. **Program:** Students in the Recording Engineering course complete training in eight months with an emphasis on hands-on training in a full 24-track studio plus three individual MIDI-equipped studios and four advertising production studios. Recording students also learn TV/video production using the school's main TV studio and three video editing studios. Radio/TV broadcasting students do all of the coursework in the Recording Engineering course plus an additional semester (four months) of study in Broadcast Journalism and Air Personality work. Accredited member of NATTS. Provides job placement assistance, student financing, professional staff. Classes start every eight weeks. Call or write for free catalog and financial aid information.

MILLS COLLEGE; Course/Program Title: Center for Contemporary Music (CCM); 5000 MacArthur Blvd.; Oakland, CA 94613; (415) 430-2191. **Chief Administrator:** Chns Brown, acting director. **Program:** The Mills College Center for Contemporary Music (CCM) offers programs in composition, electronic and computer music systems, and recording engineering to undergraduate women and graduate co-educational students. In the context of an experimental music composition program, the CCM provides hands-on training in computer music languages, software synthesis, multitrack recording and synchronization, MIDI instrumentation and control, and digital audio technologies. The Electronic Music emphasis is a track in the undergraduate Music major program at Mills, with courses also available to the student body at-large. Graduate-level courses are offered as part of the MFA in Electronic Music and Recording Media degree, as well as to students pursuing the MA in Composition. These are generally two-year programs, with most students meeting an application deadline in early April and entering in the Fall semester. For more information contact either the CCM at (415) 430-2191, the Office of Graduate Study at (415) 430-3309, or the Admissions Office at (415) 430-2135.

NEW MEXICO STATE UNIVERSITY; Course/Program Title: MUS 249/250 Audio Recording Techniques; NMSU Music Dept., Box 30001-3F; Las Cruces, NM 88003; (505) 646-2421; (505) 646-5215. **Chief Administrator:** Dr. Warner Hutchison, Jim Archuleta, Roger Jones.

PRAIRIE SUN; Course/Program Title: Audio Engineering; PO Box 7084; Cotati, CA 94931; (707) 795-7011. **Chief Administrator:** Mark "Mooka" Rennick. **Program:** We offer a full hands-on course in engineering and audio production. Classes are taught in two world-renowned recording studios. We cater to everyone, from novice to expert, to enable our students to take on most audio situations, both studio and live. Featured are two automated 24-track studios with a large collection of vintage and modern microphones. Classes cover tracking, mixing, editing, splicing, calibration, alignment, mic type and placement, plus basic studio recording skills. Some of our clients include: Damn Yankees, Faith No More, The Tubes, Van Morrison, Doobie Brothers, Exodus, Testament & Yngwie Malmsteen. Our school offers more than just classes and a diploma. We feel this will prepare you for the real world of recording. We also offer on-premises lodging. Call or write for a free brochure.

RECORDING ASSOCIATES; Course/Program Title: Sound Recording and Mixing; 5821 SE Powell Blvd.; Portland, OR 97206; (503) 777-4621. **Chief Administrator:** Jay Webster. **Program:** Video programs available: two hours at \$39 answers beginners' most often asked questions—connectors, connections, phasing, microphones, tone control, room tuning, mixing boards, sound mixing, band setup, recording, echo/effects and more. 12 hours at \$239 is a must for the pro or soon-to-be-pro. Here's the relationship between theory and the choices you make operating equipment and effects: vocabu-

lary, basic theory, adv. theory, connectors, connections, phasing, mic theory, mic application, adv. mic theory, tone theory, adv. tone theory, tone application, acoustics, room tuning, studio consoles, console operation, mix theory, adv. mix theory, compression, recorders, maintenance, echo, reverberation, other effects, production and studio tips, glossary, and more. Students enrolled in the 12-hour course who complete the final quiz with a passing grade will be issued a certificate of completion. You may write or call for free assistance in answering test questions or questions in general regarding sound and recording.

R.O.P. (REGIONAL OCCUPATIONAL PROGRAM) MENDOCINO COUNTY OFFICE; Course/Program Title: Radio/Recording Technician; PO Box 226; Mendocino, CA 95460; (707) 937-1200. Chief Administrator: Paul Tichinin; Bob Evans, instructor. Program: Mendocino County Schools Regional Occupational Program (ROP) audio recording studio for adult and high school students offers individualized instruction in recording techniques, sound reinforcement, introduction to MIDI, radio production, safety and studio etiquette. Equipment includes Tascam 16-track recording facility, 2/4-track mix-down, Panasonic SV-3500 DAT, Tascam multichannel mixing board, Yamaha SPX90, Korg DVP-1 digital voice processor, Macintosh Plus w/Opcode 2, Pro MIDI interface, Opcode Vision sequencer, DX-TX librarian, Deluxe Music Construction Set, Roland SDE-3000 digital delay, Yamaha DX7 Sequential Circuits, MAX, Korg DS8, Casio C7-100, Yamaha DX100, SD89 digital drums, Mics: Sennheiser 421, AKG condensers, Shure SM57, Audio Technica dynamics. Facility: drum isolation booth, large main tracking room, control room. No charge for training, although program requires a small materials fee for tapes, disks, books and equipment repair. Open entry/open exit. Sept-June only. Certificate awarded to completers, 1,200 hours maximum. Contact Bob Evans, studio manager/instructor.

SAN FRANCISCO STATE UNIVERSITY EXTENDED EDUCATION; Course/Program Title: Music/Recording Industry Certificate Program; SFSU Downtown Center; 814 Mission St., Ste. 201; San Francisco, CA 94103; (415) 338-1372. Chief Administrator: Mary Pieratt. Program: The Music/Recording Industry Certificate Program (MRI) offered through San Francisco State University focuses on the music business and studio engineering. Classes offer academic credit and are taught by Bay Area professionals in the field. The program is designed for both students and professionals who want to gain experience and education in the music industry through a structured course of study. Musicians, managers, agents and engineers will benefit from courses that cover a wide range of topics. Courses include audio engineering (beginning, intermediate, advanced, mixing and MIDI), offered in all 24-track studios), artist management, studio management, publicity, promotion, tour management, music video, songwriting, industry history, publishing, artist and repertoire, legal aspects, career options, concert booking and production, and the history and aesthetics of popular record promotion. Expand skills with one or more workshops or earn the MRI certificate. Courses are offered evenings. Formal university application is not required.

SAN FRANCISCO STATE UNIVERSITY; Course/Program Title: Broadcast Communication Arts Department/Audio Production Emphasis Area; 1600 Holloway Ave.; San Francisco, CA 94132; (415) 338-1787. Chief Administrator: Dr. Ronald J. Compesi (chair), Dr. John E. Barsotti (audio coordinator). Program: A four-year Bachelor of Arts program in Broadcast Communication Arts (Radio-TV) with an audio production emphasis area. Class in audio production covers basic audio theory and production, radio production, music recording and mixing; audio for multimedia, television and film; complete soundtrack production and Foley work utilizing state-of-the-art SMPTE synchronization; sound reinforcement systems and live concert sound. Dedicated facilities include one fully equipped recording studio, four audio production labs, campus cable-FM radio station, three television studios, and online and offline video editing systems. The recording studio utilizes the 2" 24-track recording format and up to 500 virtual MIDI tracks using a 386 MS-DOS computer, and is equipped with digital recording and sampling and processing equipment. Our flexible Master of Arts program can accommodate graduate students with an interest in audio production, aesthetics and/or criticism.

SONY INSTITUTE OF APPLIED VIDEO TECHNOLOGY; Course/Program Title: Production Audio and Post-Production Audio-for-Video; 2021 N. Western Ave.; PO Box 29906; Los Angeles, CA 90029; (213) 462-1987. Chief Administrator: Stephen Gach. Program: Get your career on the fast track! Learn from the leaders. The Sony Institute offers the most comprehensive curriculum in professional video education today. Workshops are university-accredited, fully certified and carry an unconditional money-back guarantee if you're not delighted. More than 25 original workshops have been developed to meet your professional needs. Courses like Production Audio-for-Video and Post-Production Audio-for-Video, plus a wide range of other subjects including ENG: Capturing the Live Event and numerous courses in electronic field production, editing, lighting and more! The Sony Institute also offers a variety of top-notch products and production tools such as Shaping Your Sound, The Video Music Composer and more. Call for a free catalog and get your career headed in the right direction. Code SS.

SOUND MASTER

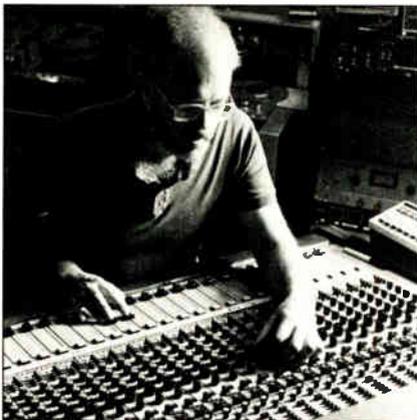


RECORDING ENGINEER SCHOOL AUDIO/VIDEO INSTITUTE

SOUND MASTER RECORDING ENGINEER SCHOOLS
AUDIO/VIDEO INSTITUTE
North Hollywood, CA

SOUND MASTER RECORDING ENGINEER SCHOOLS AUDIO/VIDEO INSTITUTE; Course/Program Title: Record Engineer; 10747 Magnolia Blvd.; North Hollywood, CA 91601; (213) 650-8000. Chief Administrator: Brian Ingoldsbey. Program: The Sound Master Recording Engineer Schools was founded in 1972 by Brian Ingoldsbey and offers rigorous training in all phases of Record Engineering, Recording Studio Technical Maintenance, Synchronization, Digital Mastering for CD and DAT, Live Sound, and full pre and post Video Production. The training program is designed for both novices and working engineers wishing to broaden their knowledge in the ever-expanding technology of music recording. Students learn by doing in projects using their own hand when requested. Classes meet day and evening. Evening classes can be taken throughout the course if desired. The Recording Engineer Program is 378 hours, 28 quarter credits, and 8-1/2 months in length, culminating in a diploma upon successful completion. Sound Master, by virtue of its accreditation with ACCET, is approved for financial aid—government loans and grants. All training is conducted by top industry professionals on state-of-the-art equipment. For information, call (213) 650-8000.

SOUTHERN OREGON STATE COLLEGE; Course/Program Title: Recording Studio Techniques; 121 Strawberry Lane; Ashland, OR 97520; (503) 482-2095. Chief Administrator: Chris Wood.



UCLA EXTENSION
Los Angeles, CA

UCLA EXTENSION; Course/Program Title: Certificate Program in Recording Engineering; 10995 Le Conte Ave., PO Box 24901; Los Angeles, CA 90024; (213) 825-9064. Chief Administrator: Lisa Brewer Herring; program coordinator, Van Webster. Program: The UCLA Extension Certificate Program in Recording Engineering is a rigorous training program that prepares the student in both the art and science of sound recording. Drawing on the talent and studio facilities of Los Angeles, one of the music industry capitals of the world, UCLA Extension has created a sequential curriculum of required and elective courses that covers both theory and practice in audio technology, equipment, musicianship, and business practice. All classes are taught by working professionals in the recording industry, who bring a wealth of practical knowledge to the classroom and studio workshops. The objective of the program is to enable future engineers to acquire vision and problem-solving techniques that meet the challenges of rapidly evolving technology and a dynamic sound recording market. Prerequisite classes are available through UCLA Extension. The Certificate Program in Recording Engineering is a State of California-approved program of significant educational accomplishment in a professional field. Additional certificate pro-

—LISTING CONTINUED ON NEXT PAGE

ONE STEP AHEAD

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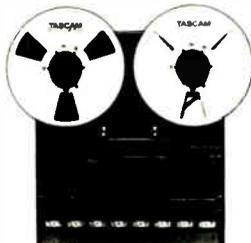


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MUSIC & RECORDING NOTES

—FROM PAGE 114, TODD RUNDGREN

make a final take. That was two weeks and a lot of expense, because I recorded it digitally and had to tie up two digital machines during the edit. The advantage of doing *Second Wind* was that since I was on the road, I got to defray some of the expenses by the performance, by selling tickets. So the audience was not only essential in terms of their participation in the performance aspect, they could also be considered financiers of the entire project.

Mix: And you didn't neglect the house sound.

Rundgren: It helps the house sound because you have isolation that you would never have in a normal live gig. Everyone's sort of forced to play quietly, or at least be adequately isolated so that if they play loud it doesn't leak into everything else. And that's a big advantage for the house sound, because then they're not fighting anything to get a nice mix.

Mix: I enjoyed attending a show that wasn't too loud.

Rundgren: The tour we did previous to the gig was pretty good because we all used headphones and ear monitors, so nothing onstage except the drums was making any noise. And it made the mix, even in smaller clubs, a lot more bearable than it would be otherwise. Midway through we took a vote to see if wearing the headphones was compromising anybody's performance, and everybody seemed comfortable with it, so we went on. I'm trying to find a way to continue that, because not only does it make the sound a little more hi-fi for the audience, but it's a good way to spare your ears.

Mix: There are a lot of choice sounds from synths, guitar, percussion and horns on *Second Wind*. Did you get those live, or go back and overdub much?

Rundgren: Everything you hear is exactly as recorded, as opposed to the *Nearly Human* album, where I had to cut a bunch of pieces together to get a take. Every take is a whole take on this record. I had five chances to choose from and each one was complete. There might be more than five, because if we screwed a take up too bad we would just do it over again. I think one show we attempted a song three times, but that was the max.

Mix: No, the night I was there I think you started "Second Wind" five times.

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ENTIRE PROJECT."

You finally threw your baton across the stage.

Rundgren: Yeah, well [laughs]. We eventually got "Second Wind" and a couple other tunes the soundcheck before the last show. Everyone was really paranoid about a couple songs, because something disastrous always happened during the actual show takes.

Mix: It's challenging material, no?

Rundgren: I don't think of it that way when I'm composing it, but when it comes down to actually playing it, it does turn out to be. Particularly getting musicians who are not orchestral musicians or used to being conducted, to

follow conducting. The whole idea is to follow the baton. And so eventually we broke through that barrier and managed to get the proper dynamics of the song. I wanted it to be a colorful, orchestral and dynamic-sounding record. I didn't want any monotonous qualities about it, and fortunately we have musicians who are versatile enough to pull it off.

Mix: Where did the master tapes actually go after you left the Palace?

Rundgren: They went to my studio in Woodstock, although I did do a little modification on a couple of songs at Skywalker Sound (Novato, Calif.). I had some songs where the balance wasn't quite right, so I added in the instruments I wanted. Because when I did the mixes I mixed them to two tracks on the 48-track master. Then to make a modification I just used the original mix and made a few additions to it. They happened to have a 48-track machine there for a couple of days, or else I might have let the changes slide. Fortunately, Sony lent me a machine on the West Coast to do the recording, and lent me a machine in Woodstock to do the mixing.

Mix: Did you take any musicians back to Woodstock to do repairs?

Rundgren: No. If I didn't find what I wanted on a particular track, I could usually find it on another track and fly it in, and there wasn't that much to do. I remember one keyboard glissando that ended in a lemon rather than the chord it was supposed to end in, and I just flew in the chord and dropped that in.

Mix: Did you add any background vocals in the studio afterward?

Rundgren: I added some ghost voices to the lower male voices. There was a problem, particularly in the vocal mics, a bit of bass rumbling going across the stage. And when you filter it out, then the voices sound a bit thin. So, to give them more body I did some heavy, low-ended EQ ghost voices on the male part. I'm not so devoted to the concept that I'd allow it to sound not as good as I want it to just for the idea of it being totally live. My concept was never to make a live album. I just figured I'd have the best raw material if I did it live. I sung some of the vocals over, and then some of the vocals I couldn't sing any better than I did live. I'm not really a purist about it, and it's not a promotional gimmick. It's just a way to get the album to sound the way I want it to.

Mix: It looked like everybody was filling out report cards between tunes.

Rundgren: Essentially they had to grade their performances, so that I wouldn't have to listen to ten hours of music just to throw out most of it. I collected them and cross-referenced them and came up with the best takes, and then considered those. And it was an aid in discovering if someone made a mistake in some particular part of a song, so I would know to duck them down or fly in a patch or something.

Mix: Lyle broke a string at one point and didn't really know what to do. It seemed to have been a good take up to then.

Rundgren: Yeah, we never knew what we were going to do. There's always the possibility that I would put two pieces together. Fortunately, I never had to. According to the rules that we were working by on the last album, we might always keep part of a take if it was good enough. But doing electronic editing is quite an ordeal. You need a console that's big enough to monitor two pairs of Mitsubishi 32-track machines, so it had to have 64 inputs on it so you could monitor the two machines. And essentially it's like editing videotape. You don't cut tape. You get the two machines synchronized and do an electronic edit. And it was a big hassle to find places that had two machines. This time we used the Sony 48-track, and it was almost imperative because we needed the extra tracks. I didn't want to be stuck with bad reductions, bad comps of instruments. I wanted to have everything on a separate track.

Mix: Was there any unexpected bleeding that occurred or anything?

Rundgren: After the first night, I went out to the truck and listened to what we had and realized we needed a lot more plastic. So between the first and second night we got a lot more Plexiglas. I got almost completely boxed in, and changed a few things around just to increase the separation. I really didn't expect to get anything the first night. That was our soundcheck gig. By the second night things had improved quite a bit. The guitar speakers were in a box offstage somewhere. Most everything was live except the keyboards and bass, and they went direct.

Mix: You spend a lot of time in the studio.

Rundgren: It's my medium of personal expression. I don't know how to write music. I can do it with a com-

puter, enter it in with a MIDI keyboard and have it print it out, but I never gained the discipline to actually read music. So for me, writing and making music are the same thing. I go into the studio and start laying down musical ideas, and modify them as I go along to fit my concept. It used to be that I would never demo a song. I would build the final version of the song from scratch. And it's only since I've gotten other musicians involved that I had to go back to make demos again, so I could demonstrate to them what to play.

Whenever I'm creating music, I require some kind of studio situation to fully and adequately visualize. I've always enjoyed the experience, and I also enjoy doing it alone. It's just great to be in there—in your own little musical world. It's like anything is possible. It helps when you know how to run the equipment so you don't have to depend on somebody else. Then you can get into this kind of flow that's almost a meditative state. ■

Robin Tolleson is a freelance writer and drummer based in Marin County, California.

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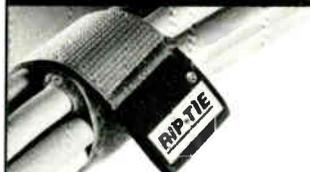
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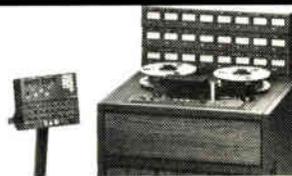
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TA 3.75	3.75	3.75	3.75	3.75
TA 1.875	1.875	1.875	1.875	1.875
TA 0.9375	0.9375	0.9375	0.9375	0.9375
TA 0.46875	0.46875	0.46875	0.46875	0.46875
TA 0.234375	0.234375	0.234375	0.234375	0.234375
TA 0.1171875	0.1171875	0.1171875	0.1171875	0.1171875
TA 0.05859375	0.05859375	0.05859375	0.05859375	0.05859375
TA 0.029296875	0.029296875	0.029296875	0.029296875	0.029296875
TA 0.0146484375	0.0146484375	0.0146484375	0.0146484375	0.0146484375
TA 0.00732421875	0.00732421875	0.00732421875	0.00732421875	0.00732421875
TA 0.003662109375	0.003662109375	0.003662109375	0.003662109375	0.003662109375
TA 0.0018310546875	0.0018310546875	0.0018310546875	0.0018310546875	0.0018310546875
TA 0.00091552734375	0.00091552734375	0.00091552734375	0.00091552734375	0.00091552734375
TA 0.000457763671875	0.000457763671875	0.000457763671875	0.000457763671875	0.000457763671875
TA 0.0002288818359375	0.0002288818359375	0.0002288818359375	0.0002288818359375	0.0002288818359375
TA 0.00011444091796875	0.00011444091796875	0.00011444091796875	0.00011444091796875	0.00011444091796875
TA 0.000057220458984375	0.000057220458984375	0.000057220458984375	0.000057220458984375	0.000057220458984375
TA 0.0000286102294921875	0.0000286102294921875	0.0000286102294921875	0.0000286102294921875	0.0000286102294921875
TA 0.00001430511474609375	0.00001430511474609375	0.00001430511474609375	0.00001430511474609375	0.00001430511474609375
TA 0.000007152557373046875	0.000007152557373046875	0.000007152557373046875	0.000007152557373046875	0.000007152557373046875
TA 0.0000035762786865234375	0.0000035762786865234375	0.0000035762786865234375	0.0000035762786865234375	0.0000035762786865234375
TA 0.00000178813934326171875	0.00000178813934326171875	0.00000178813934326171875	0.00000178813934326171875	0.00000178813934326171875
TA 0.000000894069671630859375	0.000000894069671630859375	0.000000894069671630859375	0.000000894069671630859375	0.000000894069671630859375
TA 0.0000004470348358154296875	0.0000004470348358154296875	0.0000004470348358154296875	0.0000004470348358154296875	0.0000004470348358154296875
TA 0.00000022351741790771464375	0.00000022351741790771464375	0.00000022351741790771464375	0.00000022351741790771464375	0.00000022351741790771464375
TA 0.0000001117587089538571875	0.0000001117587089538571875	0.0000001117587089538571875	0.0000001117587089538571875	0.0000001117587089538571875
TA 0.0000000558793544769289375	0.0000000558793544769289375	0.0000000558793544769289375	0.0000000558793544769289375	0.0000000558793544769289375
TA 0.00000002793967723846446875	0.00000002793967723846446875	0.00000002793967723846446875	0.00000002793967723846446875	0.00000002793967723846446875
TA 0.000000013969838619232234375	0.000000013969838619232234375	0.000000013969838619232234375	0.000000013969838619232234375	0.000000013969838619232234375
TA 0.0000000069849193096161171875	0.0000000069849193096161171875	0.0000000069849193096161171875	0.0000000069849193096161171875	0.0000000069849193096161171875
TA 0.0000000034924596548080589375	0.0000000034924596548080589375	0.0000000034924596548080589375	0.0000000034924596548080589375	0.0000000034924596548080589375
TA 0.00000000174622982740402946875	0.00000000174622982740402946875	0.00000000174622982740402946875	0.00000000174622982740402946875	0.00000000174622982740402946875
TA 0.000000000873114913702014734375	0.000000000873114913702014734375	0.000000000873114913702014734375	0.000000000873114913702014734375	0.000000000873114913702014734375
TA 0.0000000004365574568510073671875	0.0000000004365574568510073671875	0.0000000004365574568510073671875	0.0000000004365574568510073671875	0.0000000004365574568510073671875
TA 0.00000000021827872842550368359375	0.00000000021827872842550368359375	0.00000000021827872842550368359375	0.00000000021827872842550368359375	0.00000000021827872842550368359375
TA 0.000000000109139364212751841796875	0.000000000109139364212751841796875	0.000000000109139364212751841796875	0.000000000109139364212751841796875	0.000000000109139364212751841796875
TA 0.000000000054569682106375920946875	0.000000000054569682106375920946875	0.000000000054569682106375920946875	0.000000000054569682106375920946875	0.000000000054569682106375920946875
TA 0.0000000000272848410531879604734375	0.0000000000272848410531879604734375	0.0000000000272848410531879604734375	0.0000000000272848410531879604734375	0.0000000000272848410531879604734375
TA 0.00000000001364242052659352023671875	0.00000000001364242052659352023671875	0.00000000001364242052659352023671875	0.00000000001364242052659352023671875	0.00000000001364242052659352023671875
TA 0.000000000006821210263296760118359375	0.000000000006821210263296760118359375	0.000000000006821210263296760118359375	0.000000000006821210263296760118359375	0.000000000006821210263296760118359375
TA 0.0000000000034106051316483800591796875	0.0000000000034106051316483800591796875	0.0000000000034106051316483800591796875	0.0000000000034106051316483800591796875	0.0000000000034106051316483800591796875
TA 0.000000000001705302565824190029589375	0.000000000001705302565824190029589375	0.000000000001705302565824190029589375	0.000000000001705302565824190029589375	0.000000000001705302565824190029589375
TA 0.0000000000008526512829120014792946875	0.0000000000008526512829120014792946875	0.0000000000008526512829120014792946875	0.0000000000008526512829120014792946875	0.0000000000008526512829120014792946875
TA 0.00000000000042632564145600073964734375	0.00000000000042632564145600073964734375	0.00000000000042632564145600073964734375	0.00000000000042632564145600073964734375	0.00000000000042632564145600073964734375
TA 0.000000000000213162820728000369823671875	0.000000000000213162820728000369823671875	0.000000000000213162820728000369823671875	0.000000000000213162820728000369823671875	0.000000000000213162820728000369823671875
TA 0.0000000000001065814103640001849118359375	0.0000000000001065814103640001849118359375	0.0000000000001065814103640001849118359375	0.0000000000001065814103640001849118359375	0.0000000000001065814103640001849118359375
TA 0.00000000000005329070518200009245589375	0.00000000000005329070518200009245589375	0.00000000000005329070518200009245589375	0.00000000000005329070518200009245589375	0.00000000000005329070518200009245589375
TA 0.00000000000002664535259100004622796875	0.00000000000002664535259100004622796875	0.00000000000002664535259100004622796875	0.00000000000002664535259100004622796875	0.00000000000002664535259100004622796875
TA 0.000000000000013322676295500023113984375	0.000000000000013322676295500023113984375	0.000000000000013322676295500023113984375	0.000000000000013322676295500023113984375	0.000000000000013322676295500023113984375
TA 0.00000000000000666133814775000115559375	0.00000000000000666133814775000115559375	0.00000000000000666133814775000115559375	0.00000000000000666133814775000115559375	0.00000000000000666133814775000115559375
TA 0.000000000000003330669073875000057796875	0.000000000000003330669073875000057796875	0.000000000000003330669073875000057796875	0.000000000000003330669073875000057796875	0.000000000000003330669073875000057796875
TA 0.00000000000000166533453693750000288984375	0.00000000000000166533453693750000288984375	0.00000000000000166533453693750000288984375	0.00000000000000166533453693750000288984375	0.00000000000000166533453693750000288984375
TA 0.0000000000000008326672684687500001444921875	0.0000000000000008326672684687500001444921875	0.0000000000000008326672684687500001444921875	0.0000000000000008326672684687500001444921875	0.0000000000000008326672684687500001444921875
TA 0.000000000000000416333634234375000007224609375	0.000000000000000416333634234375000007224609375	0.000000000000000416333634234375000007224609375	0.000000000000000416333634234375000007224609375	0.000000000000000416333634234375000007224609375
TA 0.00000000000000020816681711718750000036123046875	0.00000000000000020816681711718750000036123046875	0.00000000000000020816681711718750000036123046875	0.00000000000000020816681711718750000036123046875	0.00000000000000020816681711718750000036123046875
TA 0.00000000000000010408340855893750000018061523671875	0.00000000000000010408340855893750000018061523671875	0.00000000000000010408340855893750000018061523671875	0.00000000000000010408340855893750000018061523671875	0.00000000000000010408340855893750000018061523671875
TA 0.00000000000000005204170427968750000009030769375	0.00000000000000005204170427968750000009030769375	0.00000000000000005204170427968750000009030769375	0.00000000000000005204170427968750000009030769375	0.00000000000000005204170427968750000009030769375
TA 0.0000000000000000260208521398437500000045153846875	0.0000000000000000260208521398437500000045153846875	0.0000000000000000260208521398437500000045153846875	0.0000000000000000260208521398437500000045153846875	0.0000000000000000260208521398437500000045153846875
TA 0.00000000000000001301042606992187500000022576923671875	0.00000000000000001301042606992187500000022576923671875	0.00000		

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—FROM PAGE 147, N.Y. METRO REPORT

Young Rascals. And of course there was the famous show where a young Bruce Springsteen stole the show from headliner Anne Murray!

See Factor, the sound reinforcement company that handled the shows with full or supplementary P.A. equipment over the years, watched a gradual decline from 30-plus shows per summer to half a dozen under Radio City management. "Under Delsner, there was a lot of business for us," says Jeff Boldenweck of See Factor. "When Radio City took over, something didn't happen and it became a nonentity."

The union troubles that brought much of New York's film and video production to a virtual halt seem to be over. In mid-May, Local 52, the crew union holdout, joined its fellow union Local 644 (cinematographers) in approving a pact that includes L.A.-style work guidelines. The seven-month imbroglio cost the city \$100 million in film and related revenues of the estimated \$3 billion motion pictures bring in each year, as several films canceled plans to shoot here.

Is there a correlation between the amount of film and video production and audio work? Many area studios believe there is, but say that the loss of revenue the labor troubles bring can be mitigated by the diversity of New York's client base. Soundtrack's president Rob Cavecchio says the labor problems are certain to encourage some production to move elsewhere.

"It's a tough town and always has been for production and trade shows, which we do a lot of," he says. "And this situation doesn't make it any better." However, he adds, Soundtrack hasn't felt any pinch yet and Cavecchio believes that New York can weather this storm as well, as long as jingle and record production remain healthy. "Some people simply have to work in New York for one reason or another," he notes, "and they know they're gonna get creamed [financially], and they have budgets that take that into account. It's a pretty amazing town."

At Videomix, Steve Dwork has found that a decline in union advertising shoots is concurrent with fewer advertising audio projects, but he's not sure what percentage is attributable to labor problems and how much to the general economy. "There's at least a theoretical effect," he says, "since video and audio are now one long chain and now there's a gap in the chain."

Sound On Sound's relatively new

Studer A827 will have found a sibling by the time you read this. Studio president and chief engineer Dave Amlen is selling his Otari MTR-90 and going for two Studers to enhance his 48-track compatibility. "This way you don't have to EQ separately for each machine," he says. Both machines are currently synched with a TimeLine unit, and Amlen is waiting for software to interface machine control through the Neve VR automation system, software TimeLine told him is imminent. Amlen has also decided to go ahead with an expansion by adding a new recording room upstairs. The room, to be designed by Amlen, architect Victor Schwartz and acoustician Francis Daniel, should be completed by the second quarter of next year.

This just in...Quad Recording experienced an intense fire in a MIDI pre-production room on May 14. The room, known as Base Hit and rented to programmer Dave Darlington by Quad president Lou Gonzales, was totally gutted by what Gonzales says was likely an electrical fire. The blaze forced a spectacular aerial rescue of two studio workers by firefighters who lowered themselves on ropes from the building roof, grabbed freelance engineer Pete Lewis and programmer Jose Gallious from window ledges on the 12th floor where flames and smoke had driven them, and safely lowered them to windows on another floor.

"The room was burnt to a crisp," but Quad Recording itself suffered only smoke damage to one floor of the multilevel facility, according to Gonzales, which will require cosmetic repairs. There was no damage to recording equipment and no other injuries. "We're continuing to operate as usual," Gonzales says. "It won't interfere with business at all."

Incredibly, three Ampex 456 2-inch masters belonging to PolyGram recording artist Jerry Woo, being worked on at Base Hit, survived the fire, the only items in the room to do so. "The fire burned the boxes completely away," Gonzales notes. "It even incinerated the track sheets. But the tape survived between the flanges. I wouldn't have believed it if I hadn't seen it. Only the SMPTE track was damaged. We transferred them to new tapes and every recorded signal was there. Once they re-lay the time code, everything's fine."

Dan Daley is *Mix's* East Coast Editor. Send ideas for the New York column to 147 East 30th St., NY, NY 10016, or fax to (212) 889-8874. ■

LIVE SOUND

—FROM PAGE 107, GROUND FLOOR

(Athens, Ga.) views the issue in broader terms. "I think it's a great start that there are these schools cropping up. But I'm not sure how well they prepare students for the real world. I think that's true of school in general, not just the audio schools."

Everyone I spoke with provides employees with on-the-job training, but one of the more ambitious in-house programs is currently under development at Burns Audio. Using the resources of in-house staff and outside industry professionals, the company is developing a videotape training seminar. They hope the videotape will give younger employees a head-start in the unique requirements of live sound for television, which is 90% of the company's work. Dave Bellamy (VP of Burns Audio), who has taught at the community college level, is in charge of developing the program, which the company hopes to have in use by year's end.

As always, there are more people looking for a foot in the door than there are entry-level jobs. "I've gotten more resumes this year from people who are better qualified than ever before," See Factor's Friedman says. So what makes one prospective applicant stand out? "An intelligence factor, I guess," Rocky Norton says. "We look for a spark, an enthusiasm, an intelligence, an ability to learn. Not people who would just be like robots and do exactly what you say, but who think for themselves, as well."

"I look for character," MSI's Zelenka concludes. They could call me 40 or 50 times, and I never tell them to stop. The ones that drop off quick I know aren't particularly interested. All sorts of people call for all sorts of reasons. It's the people who are the most passionate about it who interest me. ■

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